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£1,000 hero
Denon AVR-3312
amp flies in, p54



HOMECINEMA

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PANASONIC PT-AT5000 SONY POCKET BD PLAYER

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XBOX 360
WILL CHANGE
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WATCH TV

Choice

LG Nano LED TV: the future is now

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→ CHRISTMAS AV GIFT GUIDE → DO WE NEED CENSORSHIP?

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The secrets of The Lion King's 3D makeover, p20



WELCOME

Slimming is the trend of the moment, but while we all know losing weight is good for you, is it good for your home cinema? As we review yet another super-slim TV, LG's Nano LED model (on page 42), we find ourselves asking **what is a slim TV good for? Is it a case of all looks, and no performance?**



Because, as we all know, the problem with slim TVs is that they inevitably demand slim internal speakers and that doesn't translate into good sound. Now, the majority of our readers will have an external sound system for real movie enjoyment, but the more elaborate that system is, the less inclined you will be to switch it on for casual TV viewing. Audio enhancers like soundbars go some way to solving the problem, but they're often not the ideal solution. So do we have to suffer inferior sound for the sake of slim, wall-mountable TVs? Let us know what you think - have you given up on TV sound, or would you sacrifice slim sets for more audio oomph?

Chris Jenkins
Editor

TEAM HCC

Chris Jenkins:
Industry veteran Chris remembers when movies came on stone tablets



Mark Craven:
HCC's Deputy Editor is as passionate about AV gear as he is about Jason Statham



Anton van Beek:
Anton's love of cinema makes him the fount of all movie knowledge



James Waldron:
Taking on our tech testing calls on James' in-depth audio engineering skills



Jill Lubetkin:
Jill's magazine skills mean that even the techiest articles make perfect sense



John Rook:
Art Editor John was here when amps were all silver the first time around



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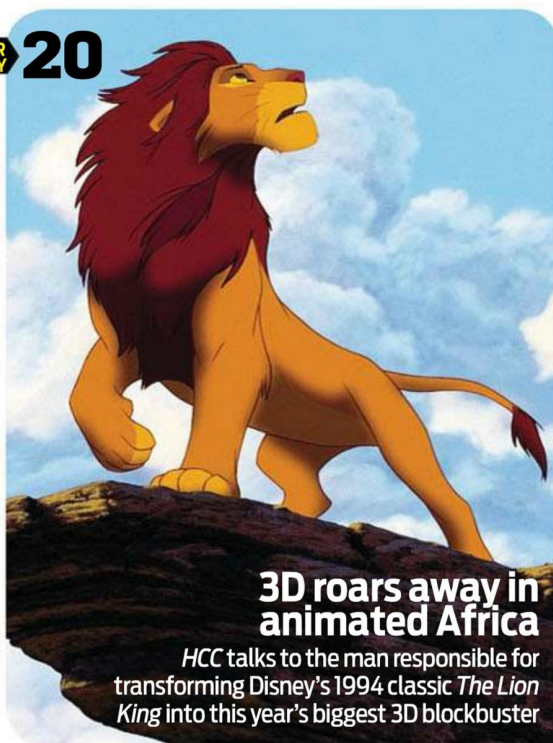
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Lights, glue and wiring
Part 2 of our latest DIY home cinema guide

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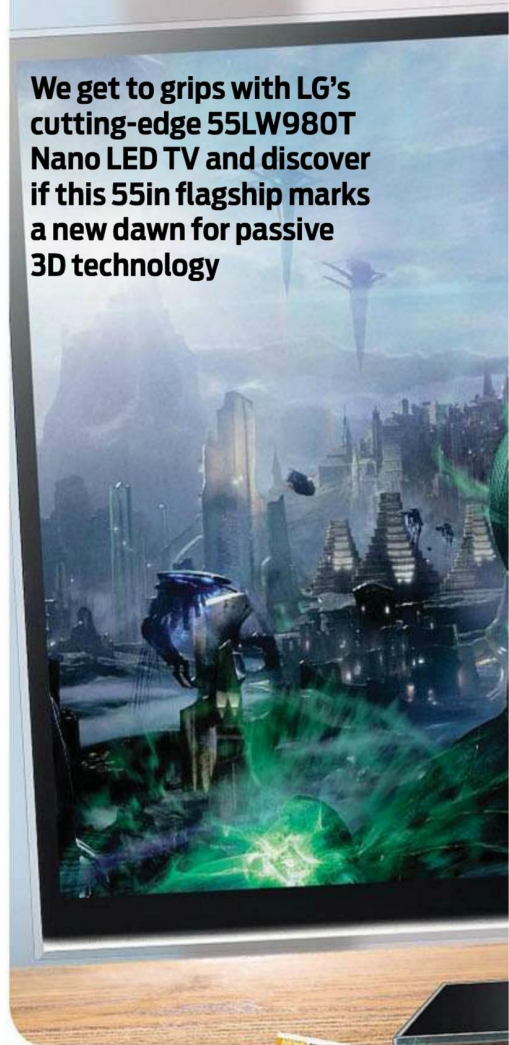
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3D roars away in animated Africa
HCC talks to the man responsible for transforming Disney's 1994 classic *The Lion King* into this year's biggest 3D blockbuster

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We get to grips with LG's cutting-edge 55LW980T Nano LED TV and discover if this 55in flagship marks a new dawn for passive 3D technology



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This issue's team of expert writers are the best qualified in the business

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The UK's foremost expert in extreme audio writes about bass, hi-fi and cartoons



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Industry veteran and former Editor of UK CE trade journal ERT



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HCC's former Editor-in-Chief is one of the UK's most respected AV journo



Adrian Justins:

Made his name as the editor of *What Video & TV* and *What Home Cinema*





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2011's best BDs and DVDs revealed. Plus the hidden costs of home cinema

Always a Pioneer

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www.airstudios.com/technical/pioneer.aspx



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PANASONIC Why 4K tech could help your DVDs look better **GRACENOTE** Everything you know about Smart TV is wrong, apparently **PHILIPS** 46in 'Moth Eye' TV claims unprecedented contrast
NEWS X10 Hot stories in bite-size chunks **SUPER 8** E.T. gets nasty on Blu-ray **AND MUCH MORE!**

Video star

Primare BD32 → www.karma-av.co.uk



Hardcore AV fans should welcome hi-fi designer Primare's new high-performance universal player, the £3,250 BD32. Not only has this disc-spinner been built to perform as a purist audio source (from its balanced XLR stereo output up to a full unbalanced 7.1-channel RCA output), it also packs customised video circuits fed by dedicated power supplies, dual simultaneous HDMI v1.4a outputs capable of 3D playback, network functionality, and RS232 and trigger connections. And it's all wrapped up in the kind of high-quality, sleek design chassis the company is known for.

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Contrast giant

Philips 46PFL9706H → www.philips.co.uk

Despite being currently limited to a fairly modest 46in screen size, Philips £2,000 flagship LED TV is guaranteed to turn heads.

Yes, it offers active 3D playback, dubbed 3D Max, and Perfect Pixel HD, 1200Hz frame rate and enhanced Ambilight Spectra XL technologies – but what really impresses is the revolutionary technology behind the 46PFL9706H's claimed 15,000,000:1 contrast ratio – a transparent foil filter, based on the nanostructures found in a moth's eye, that eliminates reflections. The net result is that it deepens dark tones and increases the output of bright elements, resulting in what Philips calls 'true to life contrast' levels. The proof, of course, will be in the pudding – but we're looking forward to eating it...

Partner with...

Loewe Home Cinema Set
2.1-channel one-box 3D system
£1,600 approx



Loewe's 2.1 system might have a boring name, but the design will appeal to style-conscious AV fans, and the central MediaVision 3D hub and the two satellite speakers can be customized with interchangeable inlays in a choice of 250 colours. Features include 3D BD, DVD and CD playback; top-mounted 'iDevice' docking and integrated music recognition from Gracenote – oh, and a 180W subwoofer. www.loewe-uk.com

In a spin



You spend ages waiting for a high-end Blu-ray player and suddenly two arrive at once. So if Primare's £3,250 BD32 (p7) didn't take your fancy, maybe Electrocompaniet's £2,500 EMP2 will suit. The Norwegian maker's high-end universal disc spinner is capable of handling both 2D and 3D Blu-ray content, along with SACD and DVD-Audio discs, and can stream content from home networks. Other features include twin HDMI v1.4a outputs, 7.1-channel and stereo analogue outputs, and upscaling via a Qdeo video processor. There's a choice of gold or silver detailing on the fascia. www.electrocompaniet.no

DSP power



UK-based audio specialist Meridian has introduced a sub to complement its existing range of DSP loudspeakers. Available now, priced around £3,000, the Meridian DSW is the company's first-ever DSP-powered subwoofer, and boasts a high power, long-throw, downward-facing 12in driver and a closed-loop Class D amplifier, which Meridian claims is capable of delivering up to 600W. The stylish plywood cabinet is particularly robust to manage the high power level, thanks to the use of internal struts and a stable, 'nested' driver. www.meridian-audio.com

Power cleanup



IsoTek has introduced a power conditioner that can be connected to up to six audio components for what is claimed to be a cost-effective way to significantly upgrade the sound quality of every source and amp in a system. Positioned between the entry-level Sirius and the high-end Aquarius, the £600 EVO3 Solus builds on the design of the outgoing GII Solus, incorporating such technologies as KERP (Kirchoff's Equal Resistance Path) and Polaris-X technologies, to increasing the effectiveness of internal filter networks. www.isoteksystems.com

Database raises its eyeQ

Gracenote says apps are dead. It's time for a new type of clever

If you thought apps were the future of Smart TV, you may just want to have a rethink. That's the message from Gracenote, the company behind the ubiquitous music recognition database.

According to company president, Stephen White, the idea of a multiplicity of different apps on your TV is anything but clever.

'There's no reason for individual online services to be siloed as apps,' he told *HCC*. 'It results in a very disjointed experience for the consumer.' Each one comes with a different set of characteristics, he argues, and the user just has to keep learning them all over.

Interactive guide

The solution, he says, is an interactive TV programme guide called eyeQ. Mixing linear TV with streaming video on-demand and unparalleled, contextual search, it will begin to appear on TVs early 2012.

'We aim to make it very simple to find content you care about,' White says. The genesis of eyeQ was Gracenote's move into DVD recognition tech. He adds: 'that was a natural evolution of our CD recognition products.'

Partnering with the likes of the British Film Institute and Tribune in the US, the company now has a huge database, which it says can empower the upcoming era of dual-screen tablet/TV viewing.

With eyeQ, you click on a TV listings entry to get a synopsis of the show, plus links to related programmes. There's also an intelligent recommendations



Stephen White, Gracenote's President, says eyeQ evolved from CD recognition products

function, which monitors your viewing habits and preferences and offers suggestions. In many

ways it's not unlike the Virgin Media TiVo experience.

Behind eyeQ is a raft of proprietary technologies developed by Gracenote: MusicID, VideoID and Video Explore.

'Video Explorer was one of our first beyond-the-disc video products,' White told us. 'It's already been used on Sony BRAVIA TVs and LG Blu-ray players and allows viewers to search movie titles and cast. By integrating Video Explore within eyeQ, the Explore experience doesn't have to be about

VOD, it can also be brought to linear TV.'

White explains, 'We've got some disruptive technology, which allows synchronisation (between screens) to happen seamlessly, without the consumer having to do anything.'

Also on the cards is Advanced Content Recognition, whereby every item in any given programme or scene becomes clickable.

eyeQ test: Will Smart TV finally live up to its name?



Playlist...

Team *HCC* reveals its Playback picks of the last month

Star Wars: The Complete Saga (All-region BD)



Every home cinema fans' favourite space opera delivers the goods on Blu-ray. *CJ*

Sucker Punch: Extended Cut (All-region BD)

Gorgeous girls, epic action and the most intricate DTS-HD MA 5.1 mix you'll ever hear. *MC*



West Side Story: 50th Anniversary Ed. (All-region BD)



This MGM musical has never looked or sounded so good. *JL*

Space Marine (Xbox 360)



This copy-cat *Gears of War* makes good use of the *Warhammer 40K* RPG mythos. *JW*

Mimic: Director's Cut – Collector's Ed. (Blu-ray)



This superb re-edit of Guillermo del Toro's first Hollywood film goes HD with a killer DTS-HD Master Audio 7.1 soundtrack and shockingly honest director's commentary. *AvB*

Talkback

Team *HCC* discusses the pros and cons of upscaling 4K video



'The feeling is that it's going to be difficult to incorporate 2K-4K chips in a low-cost

Blu-ray player,' says Panasonic's Tetsuya Itani. That's fine by me – just make a high-cost Blu-ray player instead. Any early adopter who has shelled out for a 4K display – be it a projector or flatscreen – will be probably happy to invest in something other than a budget deck to get the most out of it. Seeing as actual 4K software looks highly unlikely to materialise, it's vital that the upscaling technology is the best it can possibly be. **MC**



Over that past couple of years I've been blown away by some truly astonishing 4K restorations of classic films like *Dr. Strangelove* that I've been lucky enough to see projected digitally on the big screen. And, as a film fanatic, there is nothing I would love more than to be able to have the exact same experience in my own home. But upscaling to 4K? I've yet to encounter a single piece of upscaling tech that doesn't introduce its own anomalies and glitches into video data. So until Panasonic can prove otherwise, I'm happy to keep holding out for native 4K content. **AvB**

Time to upscale Blu-ray

Panasonic engineers look to build 4K conversion into future decks

Panasonic has begun the process of working out just how Blu-ray will co-exist with next-generation 4K displays, and predicts DVD is likely to get a new lease of life as a result.

Although no 4K TVs are on sale currently it's widely expected that 2012 will see a small number of ultra-high resolution models released. However, outside of digital still photography there is no 4K source material to use them with. The short term solution is to upscale what's available now. A job easier said than done.

Tetsuya Itani is Panasonic's go-to guy when it comes to video processing. The brains behind the brand's UniPhier chipset, he's already sizing up the implications of 4K.

Itani-San told *HCC* that behind locked R&D doors, the whole issue of upscaling 2K to 4K is proving somewhat controversial. He says TV engineers are working on an upscaler that will be resident in the panel itself. 'They have their own upconversion techniques. The feeling is that it's going to be difficult to incorporate 2K-to-4K chips in a low-cost Blu-ray player. But the same



Tetsuya Itani: Boffins are working on 2K-to-4K upscaling in Blu-ray players

kind of discussions happened when we first began to talk about upscaling standard definition to HD.' Itani himself believes it 'advantageous to do the upconversion in a player rather than at TV-level'.

One big advantage his team has when it comes to working out how to do it is the LA-based PHL (Panasonic Hollywood Laboratories) BD authoring and research centre. 'PHL is very familiar with 4K data,' says Itani. 'It's already receiving movies from the Hollywood studios in the format. So we'll be working with their engineers to deliver the best possible 2K to 4K up-conversion.'

Not that Panasonic's boffins are done with BD or even DVD. Itani suggests that there are still major strides to be made in DVD upscaling.

PAL or NTSC?

'There's an assumption that PAL DVD is better than NTSC, because it has a resolution of 576 lines compared to 480. But we recently discovered that NTSC upconversion can give better results.'

While PAL has the highest vertical resolution, it suffers from greater levels of noise. Itani says that a side effect of tuning vertical resolution ever higher is a corresponding increase in noise. 'With NTSC, the level of noise is much lower than the PAL system. With a bigger bandwidth we can make PAL DVD look better and that will come on future iterations of the UniPhier chipset,' Itani confides.



Hollywood hero: PHL continues to work at the cutting edge of next-generation video formats

Boxing Day treat



Daniel Craig and Harrison Ford will be blazing a spectacular trail through the Wild West when the genre mash-up *Cowboys & Aliens* hits Blu-ray and DVD in the UK on Boxing Day. Directed by *Iron Man*'s Jon Favreau and co-starring *Tron: Legacy*'s Olivia Wilde, this sci-fi smash does exactly what it says on the tin, pitting cowboys against alien invaders. The Triple Play Blu-ray promises stunning 1080p visuals and DTS-HD MA 5.1 audio, plus a director's commentary, cast and crew interviews, the five-part *Igniting the Sky* making of... documentary and more. www.paramountpictures.co.uk

Oh Nucky man!



The first season of HBO's award-winning crime drama *Boardwalk Empire* is set to make its UK DVD and Blu-ray debut on January 9, 2012. Executive produced by Martin Scorsese, the show stars Steve Buscemi as real-life crime figure Nucky Thompson, who ruled over Prohibition-era Atlantic City's criminal underworld. The five-disc Blu-ray boxset features 12 episodes presented with 1.78:1 1080p encodes and DTS-HD MA 5.1 audio. Extras include Enhanced Viewing Modes for each episode and six episode commentaries. www.hbouk.com

Go ape for Xmas



20th Century Fox Home Ents has confirmed that its sci-fi smash *Rise of the Planet of the Apes* arrives on DVD and Triple Play Blu-ray in the UK on December 12. DVD bonus features include two deleted scenes and two featurettes, while the Blu-ray adds 10 further deleted scenes, pre-viz animation, a multi-angle scene breakdown, four additional featurettes, *Ape Facts*, a concept art gallery and two audio commentaries. The film will also be available as part of a new *Planet of the Apes: Evolution Collection* boxset on both formats. www.fox.co.uk


Holiday gore



Warner Home Video is unleashing the gore-tastic *Final Destination 5* on DVD, Triple Play Blu-ray and (possibly literally) eye-popping 3D Blu-ray in the UK on December 26. The film looks set to be the perfect antidote to this Yuletide's inevitable glut of saccharine family movies that will clog up the TV schedules this Christmas. The DVD is limited to just one featurette in the way of bonus goodies, but the Blu-ray promises the addition of two VFX scene deconstructions and a collection of alternate death scenes. www.warnerbros.co.uk

Home movie hell

Super 8 → Paramount Home Entertainment → All-region BD/R2 DVD

A black and white photograph of three young people, two boys and one girl, looking upwards with expressions of awe and fear. They are wearing dark, rugged jackets. The background is dark and indistinct, suggesting an indoor setting at night. A large, semi-transparent watermark 'Worldwide' is diagonally across the image.

Lost and *Cloverfield* mastermind J.J. Abrams serves up a spectacular love letter to the early films of Steven Spielberg with his latest sci-fi blockbuster *Super 8*. Arriving on DVD and Triple Play Blu-ray in the UK on December 12, the film tells the story of a group of young friends who get caught up in an extra-terrestrial adventure after witnessing a catastrophic train crash. The Blu-ray promises Dolby TrueHD 7.1 audio, plus a host of extras including a commentary, nine featurettes and deleted scenes. DVD extras are limited to the commentary and two of the behind-the-scenes featurettes

Tech Diary

Our calendar is here to make sure you don't miss out...

→ NOVEMBER

21: Cars 2

Pixar's blockbuster sequel to its 2006 box office smash makes its home entertainment debut in the UK today. Race down to your nearest shop, where you can pick it up on DVD, Blu-ray or 3D Super Play Blu-ray. www.disney.co.uk

25: Dream House



Daniel Craig, Rachel Weisz and Naomi Watts head up the cast of this chiller about a couple who move into their dream home, only to discover that the former owners were murdered and that they're next on the killer's list! Opens at UK cinemas today. www.warnerbros.co.uk

28: TT3D: Closer to the Edge

A documentary about the world's maddest motorbike race and it's in 3D! What's not to be excited about? This surprise hit at the UK box office comes to DVD and Blu-ray from today. www.entertainmentone.co.uk

→ DECEMBER



2: The Thing

Is it a remake of John Carpenter's 1982 remake of *The Thing from Another World*? Or is it a prequel? And if so, why does it have the same name? Head to your cinema today to find out. www.universalpictures.co.uk

5: Happy birthday!

Legendary expressionist filmmaker Friedrich Christian Anton 'Fritz' Lang was born on this day in 1890. Check out the superb Blu-ray release of his 1927 sci-fi masterpiece *Metropolis* to see why he's held in such high regard.

12: The Inbetweeners Movie

The popular E4 sitcom made the jump to the big screen this year, and in doing so set a new UK box office record for the biggest opening weekend for a British comedy film. Pick it up on DVD or BD from today.

15: HCC #203

Your favourite home cinema magazine hits the stands today, packed with hardware tests, features, outspoken opinion and full-on software reviews

Sony's network gets reborn

Company claims outages 'woke up dormant customers'

Sony has put a positive spin on the recent disastrous problems with the PlayStation Network at an event to mark the launch of its rebranded Sony Entertainment Network.

So Saida, senior director of global business strategy and development told HCC: 'The outage earlier this year woke dormant customers up, getting them back online rather than pushing them away.'

Sonya announced its plans for a comprehensive network platform earlier in the year at the IFA show. Combining all its non-games content under the single banner of Sony Entertainment Network, the service was to include the Music Unlimited and Video Unlimited libraries, and to be available across a number of platforms including Smart TV, PC, tablet, mobile and hand-held. The short-lived Qriocity brand name would disappear.

Saida went on to say: 'we have improved the platform, the content and how you can access your content. We have increased the revenue of games by 14 per cent. We have acquired 800,000 active users for Music Unlimited, five per cent revenue for Video Unlimited and we now have three million accounts for this service. We created the 'Welcome Back' package, which is one of the reasons for the upsurge in activity on the site.'

Incentives and security

The package includes incentives such as six months free on Music Unlimited for users of Sony devices, plus free movies on Video Unlimited.



'We've improved the platform,' reckons Sony's So Saida

Nonetheless, some potential customers may still have questions about the wisdom of relying on one service for so much content – particularly if paying for content stored in the online 'cloud'.

Saida says that security issues have been addressed by new

measures such as the blocking of

automated log-ins and

a change of data centres. He said: 'we also notify customers if their password strength is not enough, and have an insurance scheme to protect those customers.'

'Sony has been attacked, but we have been upfront and honest and informed the world about what has happened,' he continued, arguing that attacks on other networks happen all the time, but are not so widely reported.

Among the new services of the Sony Entertainment Network will be a 'cloud matching' system for Music Unlimited, by which all the music on your devices will be mirrored in the cloud, meaning that it is accessible from any platform.

The Video Unlimited service may continue to be more limited, as Hollywood studios are reluctant to make their content available cross-platform. Saida admits that it may be some time before you can start watching a movie on one platform, pause, and finish it on another.



Slim and Active



HDanywhere is bringing two high performance HDMI cables to its UK lineup. The SlimWire

(pictured) is a HDMI v1.4a cable designed for use with super-slim TVs, and as such has a profile that's 50 per cent smaller than any of the company's existing range. The 'super-shielded flexi-wire' cable tech also promises to maintain signal integrity around tight bends. Prices run from £10 for 0.5m to £30 for 5m. Another addition is the ActiveWire v1.4a HDMI cable for longer runs, which filter electrical noise. Prices begin at £40 for an 8m run. www.hdcable.co.uk

Netflix next year



Streaming media service Netflix has confirmed that it will be launching in the UK and Ireland in

2012. The subscription-based service costs the equivalent of £7.99 a month in the US (where it has been operating since 2007) and streams films and TV shows to numerous devices including Blu-ray players, computers, phones, games consoles and even Apple TV. Expect it to become a regular addition to Smart TVs and other connected technology when it launches in the UK. Further details will be announced closer to launch. www.netflix.com

HD Audio speaker



Crestron International has added an in-ceiling speaker to its Sonnex multiroom audio distribution

system, which transmits 48 channels of uncompressed 24-bit HD audio across a single shielded CAT5e cable. Each two-way Excite IC6 speaker features a 6.5in woofer and a 0.78in dome tweeter, with 75W power handling and 55Hz to 20kHz (-3dB) frequency response. In addition, EQ profiles and SSP settings can be saved using the Speaker Profiles feature in Sonnex Tools. The Excite IC6 speakers will go on sale for £235 per pair. www.crestron.co.uk

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This month's top 10 news stories in handy, bite-sized chunks...

1 Overheating alert

Sony denies that it is to recall 1.6million of its 2007-2008 range of BRAVIA TVs following claims from Japan about a



fault that can cause them to overheat. However, the company claims that it is aware of the issue, and it is initiating a free inspection

programme for all

TVs that could have the faulty component. For more information, check out the Support section at www.sony.co.uk.

2 Bumper storage

Don't expect to see this in the UK any time soon, but over in Japan Toshiba is releasing a combination Blu-ray player and media server with a staggering 5TB HDD. Toshiba claims the Regza DBR-M190 will debut before the end of the year for around ¥200,000 (roughly £1,700) and that it has the capacity to simultaneously record six digital channels for 15 days on a low quality setting!

3 TV apps off to flying start

Samsung has been one of the more bullish proponents of Smart TV technology over the last year. And its efforts are paying off given the announcement that its Samsung Apps store for Smart TV apps has now passed 10 million downloads. Apparently, the store currently averages 50,000 downloads per day, with YouTube proving the most popular worldwide..

4 TV's not over yet

The saga of the future of Philips' TV division continues to drag on with no end in sight. A recent report claimed that discussions with the Hong Kong-based joint-venture TPV are 'taking longer than expected' and Philips chief executive Frans van Houten has since announced that the company is 'considering alternative options' for the division in the event that 'a final agreement cannot be reached'.

5 Streaming deal

While Dolby has pretty much lost out to DTS in the battle

for Blu-ray audio format of choice, it has announced the first discrete 7.1-channel soundtrack for streaming media. Dolby Labs has partnered with HD streaming service VUDU in the US to make the fourth *Pirates of the Caribbean* film available with Dolby Digital-Plus 7.1 audio.

6 Tablets are the way to go

Intel Corporation has announced it is shutting down its TV-based Digital Home Group and moving all of the department's engineers away from Smart TV tech onto tablet and smartphone development. Intel's CE4100 Atom processor is used in D-Link's Boxee Box and Sony's Google TV – neither of which has really set the connected-device market on fire.

7 Providers crunch numbers

Virgin Media claims that it has quadrupled the number of consumers taking its TiVo set-top box since its introduction, and that the total number of UK TiVo subscribers now stands at 222,000 households. Meanwhile, BSkyB has announced that the number of its HD customers rose by 771,000 year-on-year, taking it to a total of over 3.9million.

8 Free upgrade

Marantz is offering a free AirPlay upgrade for current and future owners of its AV7005

7.2-channel pre-amp, SR7005 Network AVR, NA7004 Network Audio Player and Melody Media MCR603 Network CD Receiver until the end of the year. Visit <http://airplay.marantz.eu> for more details on the offer.

9 Sony buy-out

Sony has bought full control of mobile phone maker Sony Ericsson in an effort to greater integrate its mobile phone division with its console and tablet business. The Japanese giant paid out a reported €1.1bn to secure Ericsson's 50 per cent stake.

10 Switchover's endgame

Digital UK has confirmed that the digital TV switchover will come to an end next October. Northern Ireland will be the final part of the UK to be affected, with analogue TV transmissions there being turned off on October 24, 2012. The other three regions waiting to make the switch to digital next year are London, Tyne Tees and Meridian.

News x10

get set for digital ✓

Premiere

HCC's guide to what's happening in the world of TV and films...

Go-to Guy

Warner Brothers is reportedly eyeing up Guy Ritchie as director for its recently announced *Cannonball Run* remake.

The filmmaker has reportedly said that he 'envision[s] [the film] with Brad Pitt starring with some of his *Ocean's 11* confreres'.

The Stath v. Bots?



Now that Shia LaBeouf has stated that he's done with *Transformers* films, who will Paramount turn to for Parts 4 and 5 (which will apparently be filmed back to back?) Well, if rumours are to be believed, the studio is looking to Jason Statham to kick some robot ass.

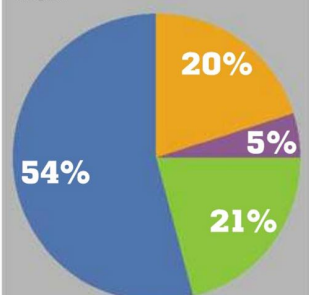
Stiller vehicle

Hollywood continues to pursue the idea of remaking *Rentaghost* as a big budget comedy. The latest news is that 20th Century Fox is developing the film for Ben Stiller, with *Night at the Museum* writers Tom Lennon and Robert Ben Garant on scripting duties.

We asked...

Do you own a 3D TV?

- Yes, I even watch 3D content on it!
- Yes, but I've never watched any 3D content on it!
- No, But I would like to get one!
- No, I've absolutely no interest in 3D!



Results from www.homecinemachoice.com
Go online for more polling action

16 GLASSES-FREE 3D



ORIGINAL IMAGE: © ISTOCK/ZARGON DESIGN

Is it time to bin the 3D spex?

Auto-stereoscopic 3D has long been manufacturers' Holy Grail. **Barry Fox** says it could be here soon

There is nothing new or magical about glasses-free or 'auto-stereoscopic' 3D. Picture postcards have been offering crude 3D for as long as most readers can remember. If your head and eyes are in the right position, the flat postcard seems to have some depth. But the image is not very clear and any head movement disconcertingly flips the 3D effect on and off.

And that's what has stymied no-glasses 3D TV. People who watch television don't want to sit stock still, as if in a dentist's chair, and they expect clear pictures.

So it is no surprise that the first people to make any money from 3D TV and video were the cellphone companies. It's now nearly 10 years since the NTT Docomo phone networks in Japan started selling 3D cellphones with screens made by Sharp. A cellphone screen is small and only one person at a time is looking at it, so the angle of viewing is very limited and fixed; and no-one expects high definition from a phone. The same goes for Nintendo's 3DS 3D pocket games unit.

Living the dream

All the major manufacturers have for many years been secretly beaver away at big screen, glasses-free 3D for the living room. But, until recently, the idea of an affordable large screen TV that delivers hi-def 3D to a roomful of spex-free viewers, sitting where they want, has looked like a long-term dream plan. However, just as flatscreen TV turned surprisingly fast from lab proposition to high-street commodity, no-glasses 3D could be ready for the market far faster than most people think.

The first sets will be expensive – Toshiba is talking about €8,000 when it arrives – but early adopters will, as ever, grab them just to be first, and the mass-market media will latch on to no-glasses 3D as the next big thing. You will be hearing a lot about the tech over the coming year, so it will pay to know something about it.

For the last 10 years, Sharp has run a large Research Lab in the Oxford Science Park created

by Magdalen College. Profits from the sale of 3D cellphones helped fund the Lab and pay for research into no-glasses 3D with big screens. This is likely why Sharp has shown so little interest in active or passive glasses 3D.

Stripped down

The basic principle behind all glasses-free 3D is simple. The picture is sliced into thin vertical strips, which alternately show sections of the left and right-eye views. The screen is covered with a grid of tiny 'lenticular' strip lenses or dark, narrow 'parallax barrier' strips like a fine Venetian blind. Either way the result is the same. If the picture is viewed from the correct angle – ideally front dead centre – the viewer's left eye can see only the left image slices and the right eye perceives only the right eye slices. And, hey presto, you have 3D! But slicing the picture into interleaved halves, reduces the resolution for each eye view. So the overall screen resolution has to be doubled. And that's not the only problem.

Several years ago when I visited, Sharp Labs MD Dr Stephen Bold told me, '3D on its own is not saleable.' That was before the current rash of 3D mania, when he was of the opinion that 'people don't want 3D all the time. So the device has to be switchable between 2D and 3D display.'



Get gaming in 3D: Nintendo's 3DS handheld console uses glasses-free tech

New year's resolution

Toshiba's new screen brings 4K cinema closer than ever

Perhaps one of the most exciting results of the industry's drive towards glasses-free TVs is the announcement of a screen with a 3840 x 2160 resolution, Toshiba's imminent 55ZL2. For videophiles this could be a major leap forward. While there are no 4K sources around (apart from digital photography), you can already pick up an AVR for as little as £500, in the shape of Onkyo's TX-NR609, that'll upscale your Blu-ray collection to Quad HD thanks to its in-built Marvell Qdeo chipset. And for those of you who constantly want to get more from your movies that's a start. It'll be like the days of DVD upscaling all over again. And we certainly expect more 4K upscaling tech to surface at the 2012 CES in Las Vegas.

The screen also has to work for people who are not all viewing from front dead centre.

At the time, Sharp was working on electronically controlled panels, which use a liquid crystal shutter to switch the parallax barrier in and out of action. A red grid bar along the bottom of the screen worked as a 'sweet spot indicator' to let the viewer adjust their position for the best 3D effect. But this only worked for one viewer at a time. So the Lab was also experimenting with a camera on the screen to track the viewer's position and adjust the screen display to match.

Technology race

At the time this all sounded far too far fetched, and Sharp fell quiet on no-glasses 3D. But others have taken up the same broad ideas. Toshiba and Philips are already giving impressive demonstrations of large screen, no-glasses 3D TVs, which give a much wider viewing angle, for a roomful of viewers. Although Samsung is still heavily promoting active shutter 3D, the company's patent filings show its labs in Korea have been working hard on glasses-free screens.

All new and improved spex-less systems slice the image into many more than two views. The common consensus is to use 9 views, computer-generated from a simple Left and Right pair. The 9 views range from extreme Left to extreme Right, through a series of Leftish and Rightish views, with the screen covered by a matching grid of lenticular lenses.

Obviously this slicing drastically reduces the resolution of each view, so the screen has to deliver much higher native resolution. Again there is common consensus; a 4k panel with 3840 x 2160 resolution instead of 1920 x 1080 full HD does the job. The total pixel count of 8,294,400 gives each of the nine views the same resolution as a 720p screen with 921,600 pixels.

Displaying nine views gives viewers more leeway in viewing position. But there is still the problem that anyone moving

their head is likely to see the 3D image flip, and even reverse, as their eyes catch different views and sometimes the left eye sees a right-eye view.

Different approaches

Toshiba uses a 55in Quad HD panel and the nine views can be switched between five zones in the room, so that viewers in different positions all get a similar view with their left eyes seeing only left images, and vice versa.

The switching is done by a camera in the TV, which recognises faces and sends viewer-location information to an intelligent 'Cevo engine' or computer. This maps which pixels behind the lens strips illuminate, so that the stationary lenses steer the image pairs into the detected zones with the left and right views always correctly paired and aligned.

Detection is triggered by one viewer pressing a button on the remote control when all viewers in the room have chosen their seats. Nine views are then sent to five detected zones. **If anyone moves significantly during a viewing session the setup must be done again. But setup only takes 'a few seconds'.**

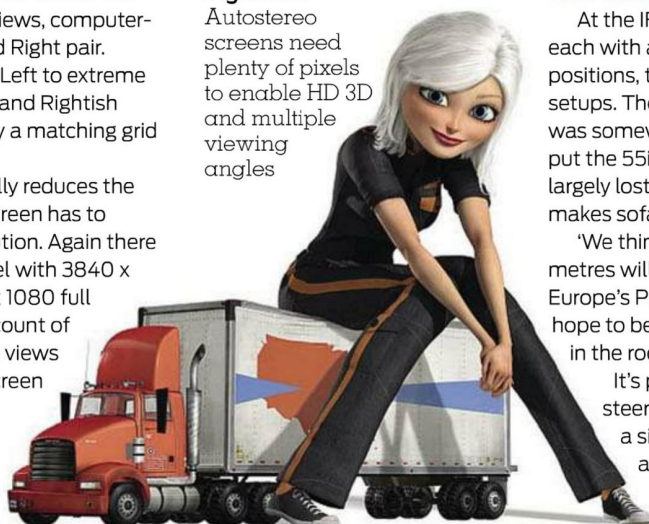
At the IFA demos Toshiba was using booths, each with a row of three theatre-style seats in fixed positions, to avoid the need for repeated system setups. The 3D effect was good, but the image was somewhat coarse because the demo setup put the 55in screen too close. The 3D effect was largely lost if the viewer tilted their head, which makes sofa lounging a no-no.

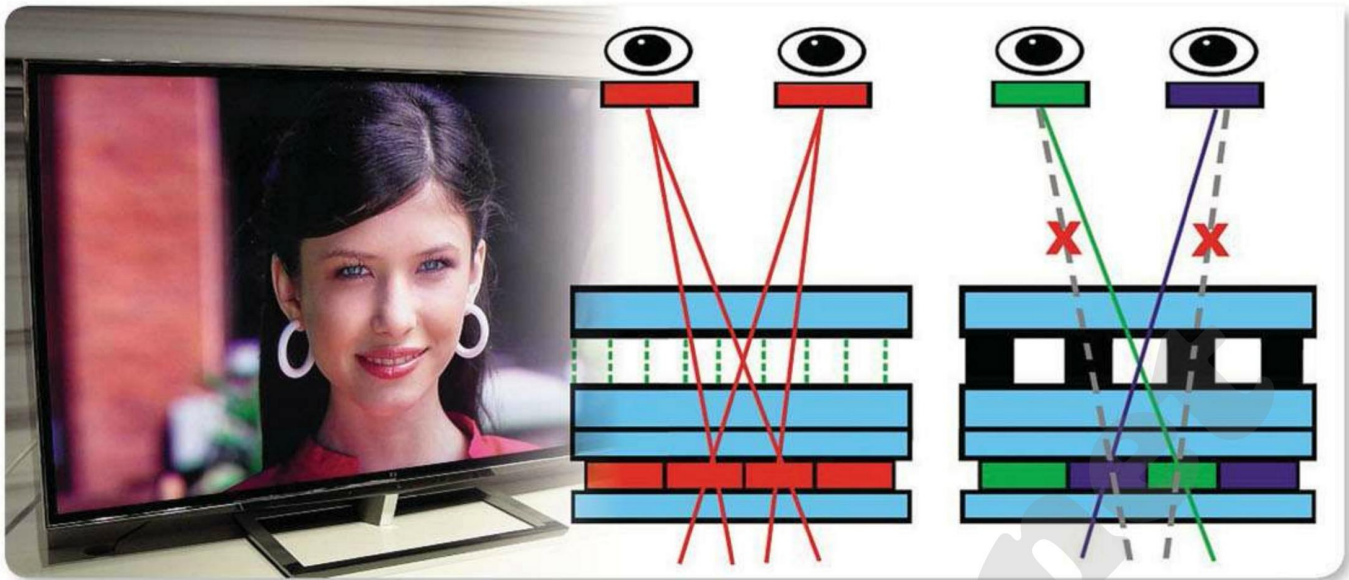
'We think a minimum distance of around three metres will be best,' said Sascha Lange, of Toshiba Europe's Products and Services Division. 'And we hope to be able to cope with around 10 people in the room. But we are still finding out.'

It's possible to switch off the optical steering and combine all the views into a single Quad HD 2D view by feeding an electrical signal to lenticular liquid crystal lenses, to physically change their shape and optical character.

Box office smash: Toshiba's marketing for its 55ZL2 TV might not please buyers of its current 3D sets

Big issue: Autostereo screens need plenty of pixels to enable HD 3D and multiple viewing angles





This is just what Samsung describes in a recently filed string of patents. Samsung covers the front face of the screen with liquid lenses, which change shape when hit with an electrical signal, in order to change the screen between a 2D and 3D state.

Philips thinks this approach is too expensive. The latest version of its no-glasses 3D screens adopt a very similar technique to that developed by Sharp's Lab in Oxford. **Instead of using a camera to detect the viewers' positions in the room, Philips displays a small panel window at the bottom of the main TV screen, which shows guide bars.** When the viewer can see one bar in the centre of the window, the left image/left eye pairing will be correct. If two bars are visible, the viewer should move slightly to either side.

Danny Tack, Philips Chief TV Design Engineer says: 'This reduces the cost, which we need to do because the 4K panel is already expensive. We also avoid the extra cost of electro lenses to switch between 2D and 3D viewing.'

For 2D viewing all the nine views are made the same, so that they combine to deliver a single high brightness, high-definition 2D image.

Philips tries a new angle

Behind closed doors at IFA, Philips was showing a 60ins no-glasses screen with an ideal viewing distance of 3m and a viewing angle of 120°, 60° from either side of centre. Philips' target is 180°. The set delivered clear bright 3D images with good depth and greater clarity in 2D. The 3D effect remains reasonably stable when the viewer's head is tilted. This, says Danny Tack, is because the lenticular grid on the Philips screen is at an angle rather than vertically aligned.

Today's home 3DTV has not been the success that the industry hoped it would be. Pundits have blamed all manner of technical issues; active glasses are expensive and can cause flicker on any daylight in the room. Passive glasses are cheaper, but screen resolution is halved by interlacing the left and right images. Viewing with glasses, either

active or passive, drastically reduces the light from the screen. With passive sets there is light loss even for 2D viewing without glasses, because the screen polarising filters are always there. And finally, no-one likes wearing glasses to watch TV.

Killing four-eyed 3D?

So it's not surprising that the industry now sees no-glasses, auto-stereo as the magic bullet answer. Companies are ready to run the risk of killing glasses 3D TV sales by talking about and showing glasses-free sets that perform pretty well, while promising better performance to come. It's a very real risk for set makers, because there is no surer way to kill sales of a current product that promise something better coming soon. It was premature talk of DVD with MPEG-2 that killed sales of MPEG-1 Video CD stone dead just as it reached the shops. Talk of no-glasses 3D could well stall the sale of both active and passive glasses 3D sets.

And not even no-glasses 3D will solve the most basic problem of all. Many people prefer watching clear flat images, which create an illusion of depth through clever use of perspective.

Artists like Monet, Michelangelo, Van Gogh, Constable and Picasso did pretty well with flat canvases, didn't they? ●

Autostereoscopy: how lenticular filters change a 2D screen (left) into 3D (right)

Menus comin' atcha:

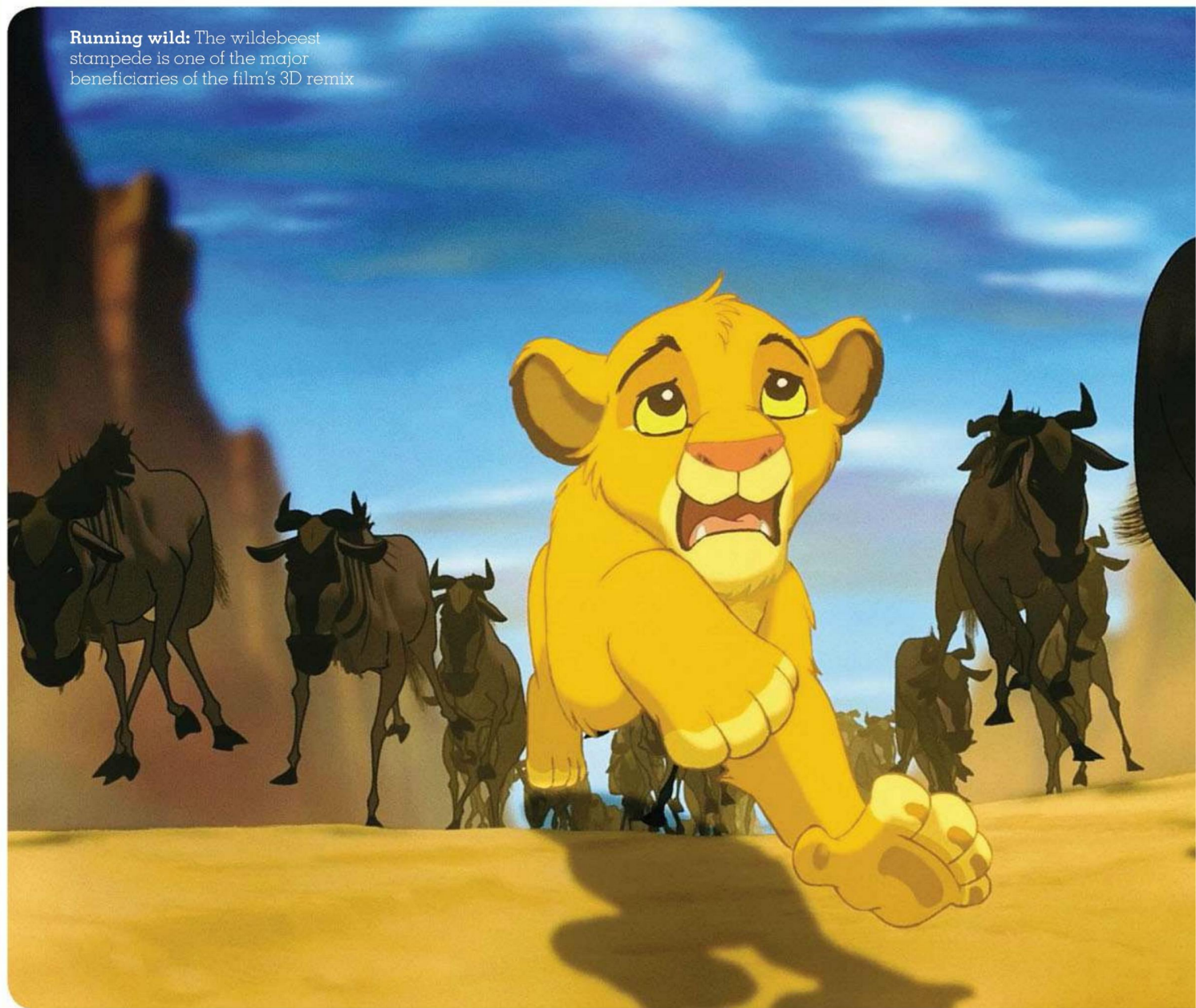
LG's Optimus phone uses its autostereo 3D smarts to good effect on the user interface

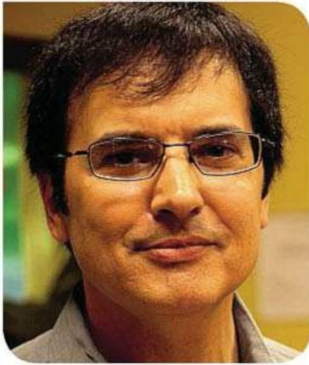


3D roars away in animated Africa

Disney's recent 3D re-release of *The Lion King* has proved a box office smash. **Ali Upham** went on safari with the man responsible

Running wild: The wildebeest stampede is one of the major beneficiaries of the film's 3D remix





King of the 3D Jungle:

Neuman previously worked as stereoscopic supervisor on Disney's CG-animated hits *Bolt* and *Tangled*



While many wait for the 3D conversions of *Star Wars: The Phantom Menace* and *Titanic* (well, maybe not...) to hit cinemas next year, Disney has wasted no time in serving up its own slice of stereoscopic nostalgia, in the form of *The Lion King 3D*. And cinema-goers have lapped it up, with US box office receipts hitting \$90m in five weeks.

Now, with the ret-conned movie out on Blu-ray (see page 95), we caught up with stereoscopic supervisor Rob Neuman to talk about the transformation of this animated classic into one of the year's biggest 3D blockbusters.

When did start work on the 3D conversion for *The Lion King*?

About a year ago. There was some pre-production work where we were defining the tools we needed. In-house we have software developers, so I came on to work with our technology department and say what kind of tools we would need to do this. That was the initial thing. When you're tackling a project like *The Lion King*, which is by all measures a classic, when you're approaching something like that it's nice that we had the original filmmakers on hand. We'd watch the movie a couple of times, once with the sound down, so we could discuss what the big moments were and what they really wanted to hit hard, and what their feelings were about the use of 3D. For tackling a work of this stature it was critical.

How long did the whole project take?

It was a four-month process. About 60 artists working for about four months.

When we first began the process of taking traditional animated content and putting that into 3D it was something that really hadn't been done before and it has its own specific challenges. From a technical standpoint there were some advantages. It's a relatively modern film – back when they did this it was one of the earlier films that Disney had made using this system that it built called CAPS, which was the original digital ink and paint system. It was a very pioneering thing on Disney's part – up until that point animation had been done by taking cels and photographing them with the camera, so instead, the artwork was scanned and then put through the CAPS system, which allowed them to do the ink and paint and the photography. And so one of the first things we had to do was task our software developers with taking this stuff – 1994 was a lifetime ago in terms of technology – take this stuff and put it into a format that modern compositing programmes can work with.

Before approaching this film I'd worked on several CG stereoscopic films. Having set up literally thousands of shots in 3D using cameras, it gave me the ability to look at

a shot and say how far in terms of describing – and we describe parallax in terms of pixel offset relative to the resolution of the image – how on a 2K image and between the left and right eye an object is going to be displaced so far. So it gave me the ability to look, after setting up so many shots, at a scene and know exactly how many pixels offset I wanted it to be at.

The next step was to go through every shot, something in the order of 1,200 shots. If it was a relatively simple shot where you just have characters and a static camera I could get away with drawing my annotations on one frame. If it had more complex blocking or camera work then I had to go and do multiple frames. So this was going through and putting all these little benchmarks in, describing where everything needed to be inside stereoscopic space.

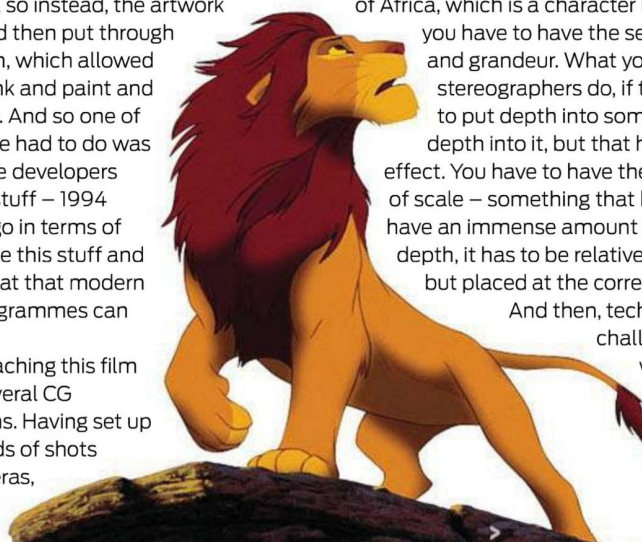
One of the beautiful things about the fact that we had this film digitally archived is that we had all of the original artwork levels [backgrounds]. A big advantage over a live action movie that gets converted is that you don't have all this background, you wind up with areas of disclusion between the characters and the background which we didn't have to deal with.

What were the biggest challenges of the 3D conversion?

In general there's a certain artistic challenge that hasn't been met yet by 3D films, which is using depth as a filmmaking tool, as something that's supporting the narrative. I tend to see either two things: there's an approach where you're just strictly taking it as a documentary-style usage – where you are just trying to use a defacto placement. Or then there's the gimmicky approach where you are just strictly trying to see how much stuff you can make fly out of the screen, and neither of those really have to do with what the narrative of the film is. **That's why I think the challenge of the 3D filmmaking community is to step up and really use it as a storytelling tool.**

One of the challenges in terms of using 3D artistically is to maintain a sense of scale and the correct point of view. You have all these great shots in the opening sequence of the savannah, of Africa, which is a character in itself, but you have to have the sense of scope and grandeur. What you see a lot of stereographers do, if they have the ability to put depth into something they will put depth into it, but that has a miniaturising effect. You have to have the appropriate sense of scale – something that has grandeur can't have an immense amount of stereoscopic depth, it has to be relatively shallow but placed at the correct distance.

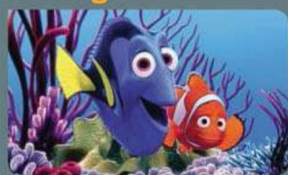
And then, technically, the big challenge of this film was that we were dealing with characters who are quadrupeds. With a quadruped, it's extruded



Raid the archive!

The Lion King's success means more Disney 3D conversions are on the way...

Finding Nemo



Next up in Disney's programme of converting its classic animated features into 3D is Pixar's best-loved feature. Due to make its stereoscopic debut at US cinemas next September, the film follows the adventures of a timid clown fish searching for his kidnapped son.

We say: There's nothing fishy about seeing this classic in 3D

Monsters Inc



July 19, 2013, sees the UK cinema release of *Monsters University*, the prequel to Pixar's 2001 box office smash *Monsters, Inc.* And in preparation for the new film, Disney is giving the original a 3D makeover for cinema release in January 2013.

We say: These 3D freaks will leave you screaming for more

The Little Mermaid



This stunning 1989 2D animated take on Hans Christian Anderson's beloved fairy tale is following in *The Lion King*'s footsteps and undergoing a 3D transformation for a cinema re-release in September 2013.

We say: Guaranteed to make a big splash at the box office

much more into space. It requires much more of that specific detailed work in order to make sure you have a character that's living in this three-dimensional space. Also it complicates the interaction of the character and the environment. You have to maintain ground contact with your character, you have these immense backgrounds that are spanning all this depth and the character has to be living in that. With a human or a biped character you are almost at a single point of contact in space, with a quadruped you have these four spots that are radically different in terms of where they are located.

When you reviewed the film were there points where you wanted to embellish the 3D further, or pull it back?

It's usually pulling back. As someone making a 3D film your task is to add that dimension and the maturity that you have to exercise is pulling back from that.

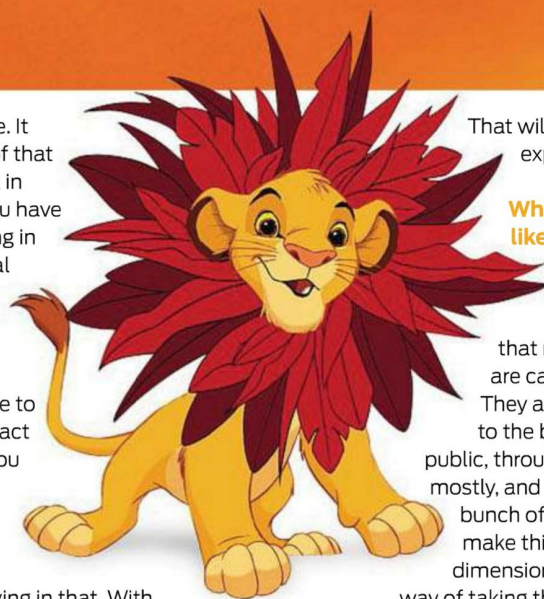
How has 3D changed the animation industry?

The Lion King was a case of a legacy film that we're going back into, but in the case of a new film that's being made with the knowledge that it's going to out into 3D cinemas I'd still say that except for these moments that are real 3D moments, filmmakers aren't thinking about it specifically. In a live-action film the choice of lens can make it almost impossible to get a good 3D result, but in our CG films we've developed a tool set that allows filmmakers to do things the way they have been doing and not have to think about it, and still get a great result.

I would say 3D hasn't had a huge impact on the filmmakers' process other than they know when they're creating certain moments that it's going to be a great 3D moment that will really sing when we put it into a 3D cinema.

What does the future hold for 3D?

From a technological standpoint I think the inevitable thing is it's going to move to glasses-free – once that's in a mature enough state that it can give a great viewing experience. Right now on larger screens it's more of a gimmick. It works fairly well on handheld devices because you only need to create a single viewing point and the viewer is in total control of where the device is placed, relative to their eyes so you get a good result from that. Also by creating a single viewpoint you aren't dividing down the inherent resolution of the device. Those are already fairly successful, I think. I think we'll see the technology mature to the point where larger screens can begin to enjoy that.



That will make it a better experience.

What do you personally like about 3D?

Essentially, for the last century filmmakers have been making films that really are 3D and they are capturing a 3D world. They are trying to present depth to the best of their ability to the public, through a flat projection mostly, and they've developed a bunch of cinematic tricks that make things feel inherently more dimensional. So now we have a way of taking that and putting it into

a real physical framework of depth. But the magical thing about 3D is once you supply these two separate views to your eyes it kind of triggers that part of the visual cortex and you're responding to something that isn't just flickering lights on a wall, you're responding to it as if it is part of your environment – and that just makes it more engaging. If it's done wrong it can pull you out of it and at worst it can be uncomfortable, but if it's done right, well, here's the testament to it and that's what's really gratifying when I do my job.

When I go back and look at the [film in] 2D, even though I think it was a great film, I feel like something is missing from it. You're just looking at it and something's not right. As long as filmmakers can create something where that's the effect then essentially what they are doing is creating something that's more engaging. There's more neurons firing, you're being lured into the story more.

What's your favourite moment in the new 3D version?

There are so many. It goes back to the opening sequence. We'd been working so intently on every shot that finally when we put the entire sequence together to play it in continuity and went through it... Boom! The title comes on, the hairs were standing up on the back of my neck. Everybody in the theatre was just electrified by it.

And are there more Disney classics in 3D on the way?

We've developed this technology and we're incredibly happy with the results we're getting, but in terms of our current business model at Disney, animation is more geared towards making new content. The incredible talent that we were able to utilise on this, the 60-odd artists drawn from different departments of filmmakers in animation, who are normally busy making our new content – we were lucky to get them in between productions. In the foreseeable future we are going to be stepping up to a new release a year, which means less time in between productions. I'm not sure when the next opportunity will be but we're looking forward to it. [Since this interview, Disney has confirmed three more 3D re-releases (see box out), so we guess Neuman will be busy...] ●

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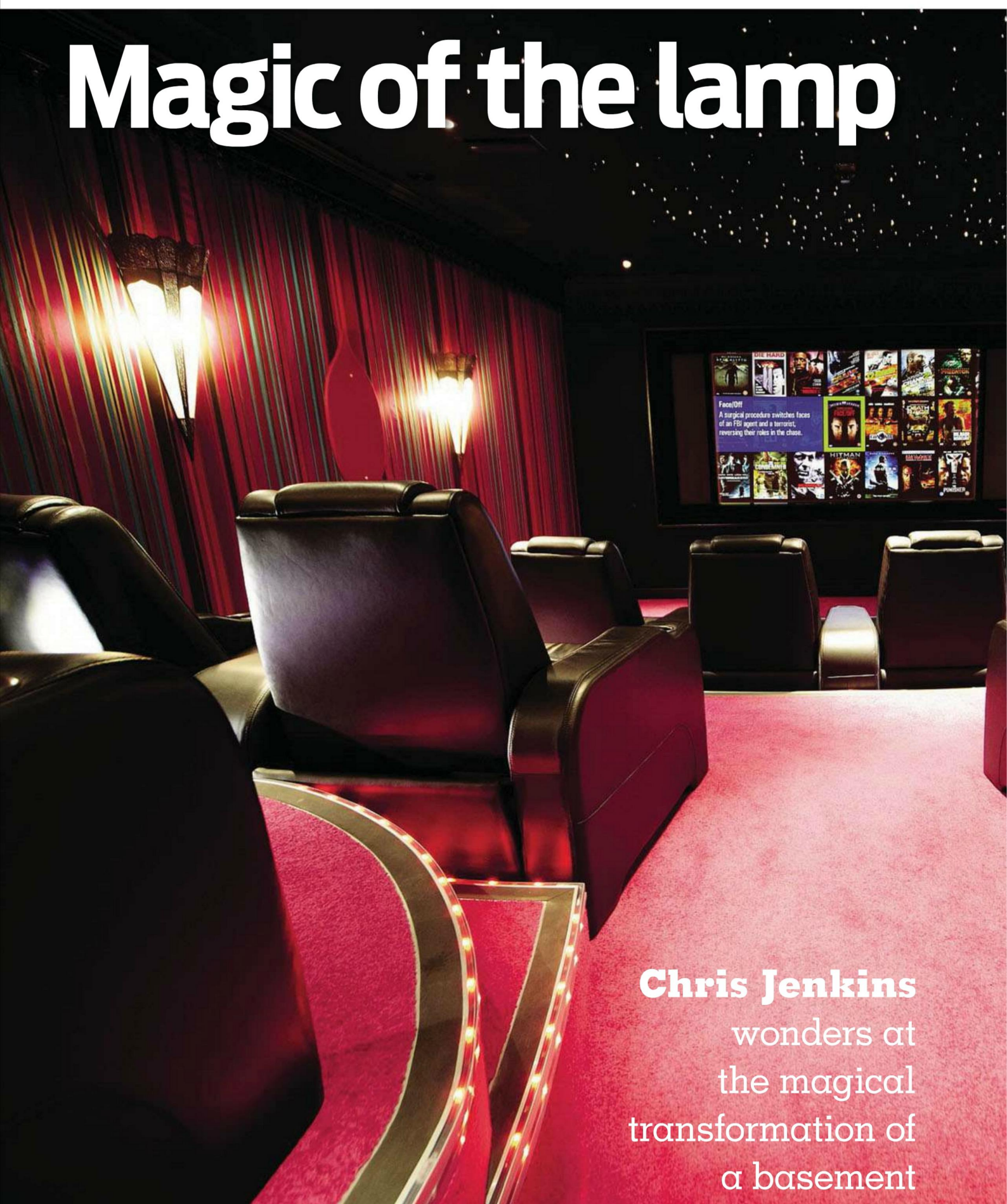


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Magic of the lamp



Chris Jenkins
wonders at
the magical
transformation of
a basement

The luxurious home cinema room seats an audience of 12

There are revolutions in progress going on in the Arab world at the moment, but they're no more stunning than the work done on this Arabian Nights-themed install by St Albans-based FAB Audio Visual (and not a shot was fired).

A winner in CEDIA's Over £100,000 category, the project had a pretty simple brief: 'There's the basement, turn it into a cinema for 12 people'. Actually, the client had a bit more than that in mind, as he also had his heart set on a dance floor and a gym. The client's background from the Arab Emirates suggested the theme of the décor, but it was pretty well up to FAB AV to come up with the specification.

The location was on their side in one important respect – the basement was already pretty well soundproof, and there was little danger that sound would leak into the rest of the house. But of course, it would need considerable acoustic treatment to get up to the standards of a high-value home cinema system, and the walls ended up being treated with 240 tubes of Green Glue visco-elastic damping compound.

Another requirement (not unusual at this end of the market) was that the majority of the AV equipment should be concealed. While that might not be the first priority of the average AV enthusiast, it's a common theme among high-end clients who are enthusiastic about performance, but don't feel any need to see the source equipment!

Aesthetic fit

FAB AV's specification aimed for an installation in keeping with the rest of the property in looks, but embodying award-winning performance. Genelec speakers were chosen for their overall quality and their ability to be concealed in-wall; two Genelec A1W312 active hidden monitors were concealed either side of the 120in Screen Excellence, acoustically-transparent screen, which also hides the HT312 centre speaker, and two Genelec HTS4B floor level subwoofers were fitted.

To hide the front speakers a false wall was constructed then covered with a black, acoustically transparent cloth. The void behind it was then filled with an open-cell foam to act as a bass trap. The internal walls were then fitted with acoustic absorbers and diffusers. Dark striped silk cloth was then stretched over the remaining walls, with dark wood pelmets and skirting boards fitted to

→ Kit Checklist

Genelec: 2 x AOW312B active speakers, 1 x HT312B active speaker, 6 x IW25 active speakers, 2 x HTS4B active subwoofers

Onkyo: PR-SC866 Audio Processor

Dolby: Lake Audio Equalizer

Digital Imaging: Titan 1080P

DLP projector

ISCO: Iscoscope 3S Anamorphic Lens,

Motorised lens sled

Screen Excellence: 120in wide acoustically transparent side masking projection screen

Kaleidescape: 1080p player, 3U server

Sky HD: Receiver

Crestron: AV2 control processor, TPMC-8X plus in-wall charging dock

Helvar: Lighting control system

Middle Atlantic: 42U equipment rack and custom shelves

Elite HTS: 12x Home cinema reclining seats in Black leather

30 INSTALL

continue the Arabian theme.

The system also boasts a total of six Genelec 1W25 active mounted speakers completing the 7.1 surround sound setup.

Considerable thought went into the choice and positioning of the cinema speakers, ensuring that the best sound was delivered, but a clean uncluttered look was still achieved. The active speakers were mounted adjacent to the two rows of seats and along the back wall, either side of the projection porthole.

At the heart of the audio system sits an Onkyo SC886 processor and a Dolby Lake sound equalizer, usually found in large live music venues.

Aiming for a video experience as spectacular as the audio performance, FAB AV specified a digital projection Titan 1080p DLP projector and ISCO 3 anamorphic lens and lens carriage, chosen for their immaculate imaging capabilities. The projector was housed in a mechanically-ventilated box in the ceiling void of the room next door, eliminating any intrusive noise. The projector is separated from the cinema room by an optical glass panel.

All source equipment was housed in a 42U Middle Atlantic Rack located in the air-conditioned communication room, which is also home to the rest of the house's AV data and communications equipment. To maximise ease of use for the client, a number of sub-systems were integrated into the operation of the room, including a Helvar lighting control system for the entire house as well as the cinema. All aspects of the home cinema can be controlled by a Crestron TMPC-8X touch screen remote (with in-wall docking station) and AV2 processor. The system allows the projector and amplification to turn on and the lights to dim as soon as a video source is selected, with the client having a range of video sources to choose from including a Kaleidescape player and video server and Sky HD.

Tread Geni-us

The clever and systematic design of this cinema also includes raised seating platforms for the rear and centre rows of Elite HTS seats, which themselves feature bass traps to help absorb low level frequencies. For the finishing decorative touches, the client selected a purple carpet, with red LED marker lights to outline the step treads.



Room essentials

A Arabian lights

LED marker lights illuminate the step treads

B Touchy, feely

Crestron's control touchpad ties the whole system together

C Double function

The Elite HTS chairs aren't just comfy, they also act as bass traps

D Sky's the limit

The giant 42U Middle Atlantic rack houses source equipment including no fewer than eight Sky HD boxes

E Hidden monitors

The 120in-wide Screen Excellent screen conceals the Genelec active monitors positioned to either side

F Grand design

Luxury and opulence were the keywords for this design, as the richly colourful décor makes clear



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Lights, glue

part 2

In the DIY challenge this month, **Chris Jenkins** takes up the story at the point where we tackle effective soundproofing, lights and cabling



Premium seating
provides
comfortable
viewing for the
whole family

and wiring

Last issue we discussed some of the basics of a DIY home cinema room project, from the shape of the room itself to the sorts of decisions you need to make about speaker and screen positioning. (You can find Part 1 on the website at www.homecinemachoice.com)

But of course, once a build is underway, there's always the possibility you might come across problems that force you to change your plans – in our case, because the ceiling height had been lowered to allow space for lighting and cabling above it, the remaining space wasn't sufficient for the projection screen housing!

Step 1: Sound Intentions

It was never our intention to attempt to soundproof this cinema room. Soundproofing, as opposed to noise control, requires a completely different approach to building, by which the entire room is essentially enclosed in a box (see the Top Tip box, right).

But even if you aren't attempting full soundproofing, there's no reason you can't take some noise control measures, whether to prevent noise getting in and disturbing your viewing, or to reduce it leaking out and disturbing others.

The first sensible measure is to use acoustic-grade plasterboard. This costs typically only a few pounds more than regular plasterboard, but will improve thermal control and enhance structural rigidity, particularly important as we were building two subwoofers into the wall.

We used two layers of 12.5mm Gyproc SoundBloc, forming a sandwich with a layer of Green Glue.

Acoustic grade plasterboard provides extra structural strength and is well worth the moderate extra cost



Our old friend Green Glue acts to dampen some of the energy in the cinema room structure and is not, in fact, an adhesive

We've mentioned this wonder substance before (it was also used in the design of HCC's in-house demo room), but many readers may be unaware of its applications.

Officially a 'visco-elastic damping compound', Green Glue comes in tubes like mastic, and is applied with a 'gun' (make sure you get an Imperial measure gun, as the tubes are 29oz capacity). Green Glue is normally bought in cases of 12 tubes, with a case normally sufficient to treat an area of 100-200 square feet, so you may need 3-5 cases to treat an entire room.

In a normal wall structure, the impact of sound waves causes the wall to deform and vibrate, causing vibration and hence noise on the other side of the wall. If you have a dual-layer wall, there's also the possibility of rattle.

The American makers of Green Glue claim that an application improves the energy dissipation of the material, converting audio energy it into 'sheer force' and hence heat. This is particularly useful when in-wall speakers are rigidly fixed to wooden battens and to the wall boards.

It's claimed that Green Glue improves the damping factor from 0.006 to 0.5 or more; the reduction in wall resonance achieves the deadening effect we're looking for.

It would be wrong to think of Green Glue as some kind of miracle soundproofing gunk; it's not. But there is plenty of evidence that it can, at the very least, diminish some of the energy in the cinema room structure itself.

Despite its name, Green Glue is not an adhesive, but it is applied in roughly the same way, squeezing it out generously in swirling patterns on the inside plasterboard. The panel is then pressed to the wall or ceiling battens and screwed into place.

Step 2: Hack and slash

While the plasma TV would be fitted permanently in the wall alcove, the roll-down projection screen would be lowered for the full cinema effect. Having measured the gap properly, our builder hacked back the ceiling joists, so we could fit the screen casing. The case itself would be screwed directly into the ceiling joists.

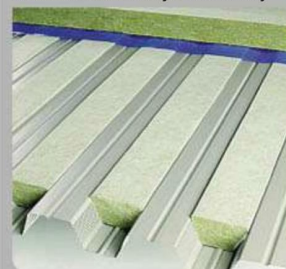
When it became obvious that we hadn't left enough headroom for the drop-down screen, we

Top Tip Boxing clever



True soundproofing can be achieved by building a room within a room and 'decoupling' the two to

eliminate the possibility of sound vibration passing into or out of the inner chamber. There are lots of ways to do this, but all of them are relatively expensive and time-consuming. Most sounds transfer from a room to the outside (and vice versa) through mechanical means; vibration travels through structural elements such as brick, plasterboard and woodwork, and can even be amplified by walls, ceilings, floors or windows acting as a sounding board. Sound deadening measures can't eliminate this effect entirely; the only effective technique is decoupling, which breaks the connection between the room and the outside world. This technique makes heating and ventilation difficult, but the main issue is that you basically

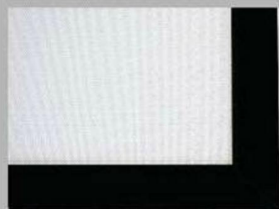


have to build a room within a room. Usually double-layer plasterboard walls are constructed, with out-of-step vertical battens that don't touch each other. The plasterboard attaches to the battens using noise-deadening 'sound clips' that have rubber washers, and the gap between the boards is filled with insulation. Concrete floors don't need much soundproofing, but wooden floors may need underlays of acoustic mineral wool.

Top Tip

Acoustic transparency

Since it would descend in front of the Definitive Technology speakers, it was vital that the projection screen be acoustically transparent. If you have a long room with plenty of space between the front and back wall, you can allow two to three feet behind your screen to place your speakers and sub(s). In that case, though, you will need to acoustically treat this area and add bass traps in the corners. A black cotton material is usually placed behind the screen to ensure there are no light reflections. You should also be able to access the speakers via a removable panel or false sidewall. We'd chosen to have the subs in our side walls, so we wouldn't need that much space or acoustic treatment behind the screen.



There are two types of acoustically transparent screen available: micro-perforated and woven. Your choice will depend on the type and resolution of your projector. The regular weave of a fabric can overlap with the field of pixels from a projector, causing changes in reflected brightness, which become visible as line artefacts. This moiré effect explains why you can't just use a bedsheet as a projection screen.

The higher the resolution of the projected image, the greater the likelihood that you will see a moiré effect on woven material. Only a weaveless material can eliminate this entirely. But PVC-type screens and perforated with thousands of tiny holes can be acoustically transparent while eliminating the moiré effect. THX-certified perforated screens tend to be expensive, however. So our compromise between price and performance was a ClearPix2 woven screen from the Screen Research range, an acoustically-transparent fabric with THX certification.

began to wonder whether we had left sufficient space for other fitments – such as a sofa. As it turned out, the one we had in mind was indeed too wide for the bay window area. Since we couldn't chop six inches off either side of the settee, we decide to widen the window, which was easily done by removing one row of bricks from either side of the bay.

Our next step was to complete the cabling, as this had to be done before finalising the plasterboarding.

The temptation is always to go either for cable which is too cheap (which saves money but can cause problems with performance and reliability) or too expensive, guaranteeing performance and reliability but limiting your installation options. For instance, quality cables tend to be thick and not very flexible. Bending them around corners might prove impossible. You might also have problems with some over-specified plugs, which can refuse to fit when space is tight.

We thought our selection of Ixos cables

gave us the right balance between performance, price and installation options. The loudspeaker cable chosen for this job was XHS523 Parallel Geometry low-resistance speaker cable, which has the girth to satisfy audiophile concerns, but is relatively easy to thread.

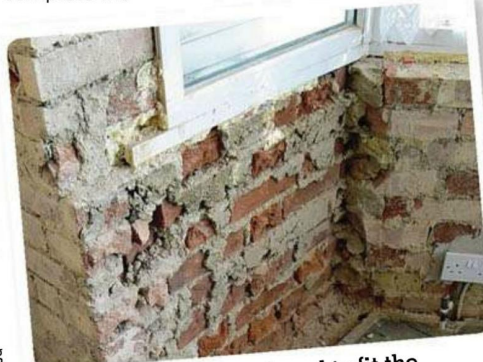
The heavy gauge Ixos HDMI cable was a tougher proposition, but it was possible to anchor it to the studwork without too much difficulty.

When the speaker cables were attached to each enclosure, we squeezed flexible sealant onto every fixing. You don't want a connection to work loose when it's tucked away under plasterboard.

Step 3 Light work

For this install we chose a lighting system from

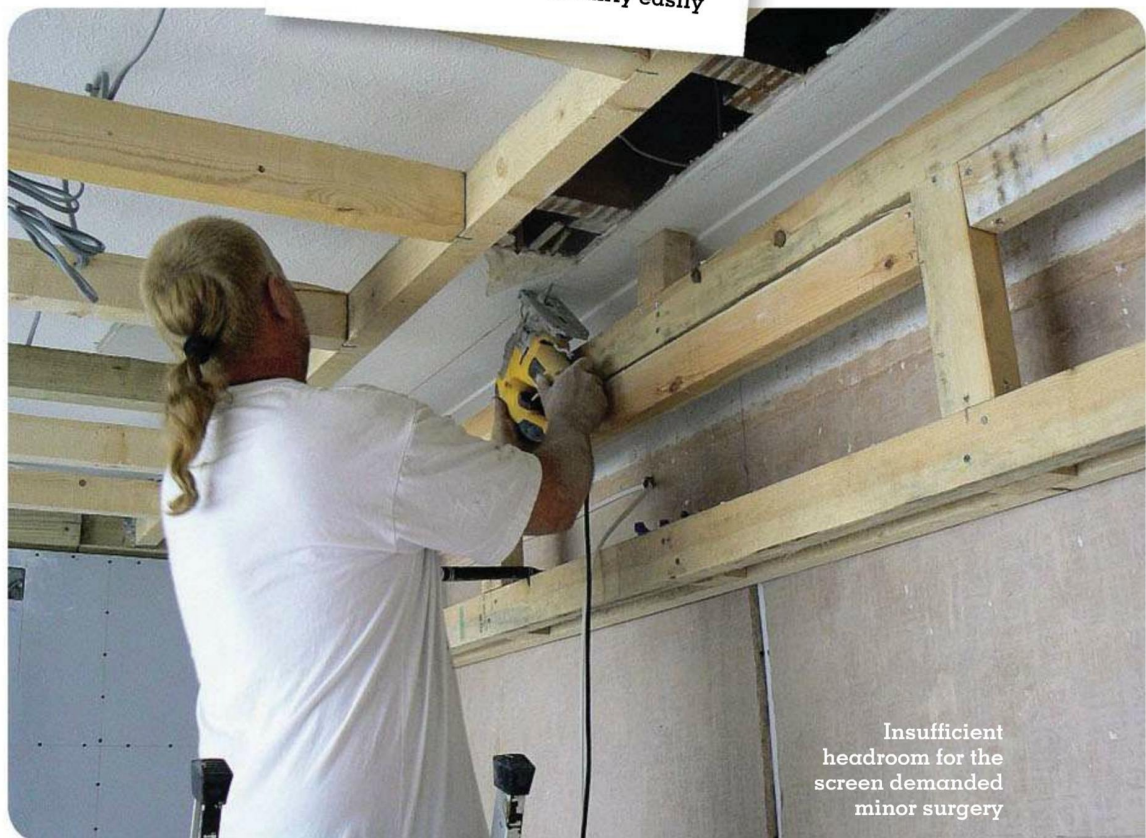
Niko, which features four dimming circuits and allows for a variety of lighting configurations. The system is controlled via CAT5 cable, which we routed into the adjacent garage. There we had a custom bank of Niko control boards housed in their own cabinet installed by RajVar Technologies.



The bay had to be widened to fit the sofa after initial measurements proved wrong!



We were able to anchor the heavy-duty Ixos cable to the stud walls fairly easily



Insufficient headroom for the screen demanded minor surgery



Niko's lighting system connects to the CAT5 network, though we didn't use the fancy touch controller shown here

We took this opportunity to extend the CAT5 network to other rooms in the house, including the boot-room where we planned a server point, and living rooms where lighting and security controls could also be connected to the network.

We also ran Ethernet cable to the apex of the bay window, adding extra network points to help futureproof the room. Despite the utility of wi-fi and Powerline networking, you can never have too many hardwired networking points!

Step 4 Totally plastered

So, with the front speakers and sub installed in the walls, lighting and cabling systems fitted and screen mounts assembled, we were ready to plaster the walls.

Prior to plastering, we made sure to note the position of the loudspeaker cables and the timber framework, making multiple measurements and drawing a representation of the speaker positions on the ceiling. It's essential to get this right because you don't want to have to replaster.

When the plaster dried, the walls were painted white. Now, we know this is probably the worst colour you could choose for a home cinema; ideally you would choose black, or a dark blue or battleship grey, to minimise reflection from the screen. But since this room would also be used for music listening and other family affairs, it didn't seem practical to go for those options as they would have been too gloomy for everyday use.

Now we could proceed to install the Screen Research acoustically-transparent screen. Here our calculations again proved to be a little flawed. The 110ins screen has a width of 2,794mm, but the actual casing measures 2,994mm. To our horror, we discovered that it only just fitted in the width of the room.

The screen system involves a motorised trap door, which sits flush with the ceiling. This has to be installed before the screen and comes with a mounting kit. Despite all efforts, we couldn't make this fit, so instead we just drilled holes through the roof of the casing so we could screw it directly into the ceiling joists. The danger of doing this was that any left-over aluminium shards might have torn the screen fabric, so the case had to be cleaned

out carefully after drilling.

Lifting the heavy casing into place took four of us, but we were relieved to find that, once presented to the ceiling joists, it fitted perfectly.

The next step was to install the in-ceiling rear speakers and this involved cutting into our beautiful plasterboarding. Four Definitive Technology Reference UIW RSS speakers were used to create the rear soundstage. They employ a unique angled bipolar-array which creates an enveloping soundfield, directional enough for multichannel music and spatial effects, yet diffuse enough for genuine surround movie ambience.

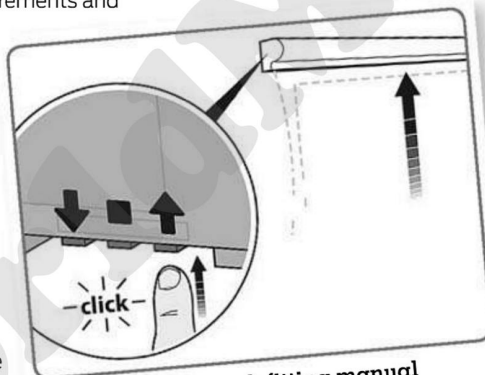
Direct-radiating speakers can be too directional and distracting for rear use, particularly for someone who is sitting too close to them. And unlike dipoles, bipole speakers feature multiple drivers operating in phase.

Traditional THX-style dipoles have two drivers that are out of phase; dipoles are typically placed on the side wall, with the viewer sitting in the null point. The technology works well for movies, but less so with music playback. To get around this, some manufacturers build speakers with a switch that allows you to toggle between bipole or dipole output. As we intend to include in our system a DVD player capable of SACD and DVD-A playback, bipoles were the way to go...



We marked the position for the in-wall speakers before mounting the plasterboard

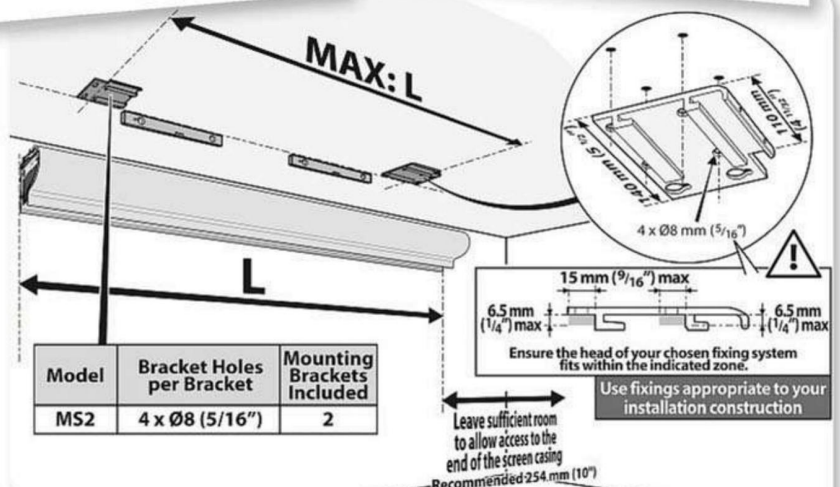
Next issue: Heart-stopping moments as we unroll the screen, and lift the plasma TV into position...!



The Screen Research fitting manual requires careful reading before you start the install



Plastering the walls was a landmark moment and demanded the skills of our professional builder



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Audio Venue **Ealing**
Oranges & Lemons **Clapham**
Music Matters **Hatch End**
O'Brien Hi-Fi **Wimbledon**
Infidelity **Kingston**
Unilet Sound & Vision **New Malden**
Rococo Systems & Design **Islington**

South East

Audio Images **Lowestoft**
Soundcraft HiFi **Ashford**
Kent Home Cinema **Tunbridge Wells**
Horsham Hi-Fi & Home Cinema **Horsham**
Hi-Fi Cinema **Aldermaston**
Rococo Systems & Design **Stansted**

South West

Mike Manning Audio **Yeovil**
Audience **Bath**
Sevenoaks Sound & Vision **Bristol**
Sevenoaks Sound & Vision **Cheltenham**

Midlands

Music Matters **Edgbaston**
The Sound Academy **Bloxwich**
Castle Sound & Vision Ltd **Nottingham**

Wales

Sevenoaks Sound & Vision **Swansea**

Northern Ireland

Kronos Audio Visual **Dunganon**

North

Elektrikery **Wilmslow**
Sevenoaks Sound & Vision **Sheffield**
Peter Tysons **Carlisle**
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AV Clinic



Is your sub-bass boomy, your picture peculiar or your cabling concerning? Write to **HCC** with your home cinema problems, and our team of experts will suggest the solution!

Fear of bass

I love your magazine, and have been subscribing to it for years. Could you please give me just a little advice? I'm running a 7.1-ch Jamo D7-PEX speaker setup from my Denon AVP/POA A1HD pre-power combo. I want to replace the Jamo THX ULTRA 2 sub with either two Velodyne DD15s, or one DD18 sub. Would either one of these be suitable for my Jamo D7-PEX speakers? If yes, should I go for the two DD15's or one DD18? The size of my room is approx 7.2 x 4metres.

M.Sahota v e-mail

Our subwoofer expert Adam Rayner replies: Loving your dedication to the Fear Register of the lowest lows! Also, you have a lovely, big old cubic area to excite there, which is nice.

Now, your question boils down to a couple of things. First off, the whole THX concept has evolved, and of course, one of the things you are paying for when buying equipment, and subwoofers



Drivers: the secret of subwoofers

especially, is the 'Known Good' performance. So very many over optimistic claims get published by manufacturers about features of such products, particularly about output power. Of course, different brands have different approaches to their speaker technology and although oddly, years back, Jamo were known in the UK for their commodity speakers placed in pubs (the sort that you replaced in total for a few quid if they got beery), they also make speakers that go all the way to

Be afraid:

Velodyne's subs will stir your soul

fabulous. Your Jamo subwoofer rocks by regulation.

From your choice of front-end electronics and that speaker package, it's clear you are well aware that 50 per cent of the home cinema experience is the sound. So many big, sexy theatre installs have their feet tied behind their neck sonically because they specify so-called 'custom install' product. The CI speaker is usually a ceiling speaker a little bit better than they use in shops, and I have never heard one as potent as a big car audio coaxial! So, again, it's cool that you want to commit. The question is, how bad-ass you want to go?

The easy answer, the one that adheres to what we have found collectively and individually at HCC Towers and

Judges' Houses (sorry, reviewers' homes) is that two smaller subs are always better than one big one. Without rehashing the entire debate, let me add my own personal wrinkle to that.

It has been shown, in the world of extreme audio, that the laws of physics work at their best with 15in bass drivers. They can push out savage amounts of air, go down to single-figure frequencies in Hz, yet change direction quickly to provide impulse boom. An 18-incher has to be a little slower, as it weighs so much; but Velodyne's DD products are damn fast, even at a mighty 18ins! Incidentally, they're plenty sophisticated enough to blend into your system like they were the Cuckoo-children of your Jamos (and indeed any speaker system, such is the adjustability of their tech).

So, I'd argue that either approach is good: two DD15s or one DD18. But there's an even better solution. I suggest you get one DD18, but then start saving up for a second one. Place them at the front left and right of the room in the corners, and when it all kicks off in your action movies, you'll get a bass response which will rattle the structure of your house (and the rest of the street) and will instill fear in your listeners!

(Adam clearly doesn't think there's such a thing as 'too much bass', but you get his point! *Editor*).



The art of Gamma

Could you give me some help regarding gamma response settings for my TV? I have seen various suggestions as to correct settings – for instance, the World of Wonder test disc suggests 2.2, while Spears and Munsil has 2.5, and I read recently in *HCC* a statement saying it should be 2.4.

Richard Powell via e-mail

Gamma response is little understood and most users will never alter it on their TV. It's more likely to be adjusted by a professional calibrator on a projector. However, it's useful to have an understanding of what it means. It all dates back to the days of cathode-ray tube TVs, when it was realised that CRTs do not produce a light intensity proportional to the input voltage, but proportional to the input voltage raised to a value which was labelled 'gamma'. The gamma response is due to electrostatic effects in the electron gun, and its value varies depending on the design of the CRT, but it's usually around 2.5, so increasing input voltage by 50 per cent produces an increase in intensity of only 18 per cent. The effect of the CRT gamma is to darken the midtones relative to the dark and light regions. To correct for this effect, TV cameras were designed with gamma correction built-in.

But in modern TVs and monitors, gamma correction is part of the display driving software, though it's not very well standardised. Since gamma correction can affect colour as well as brightness,

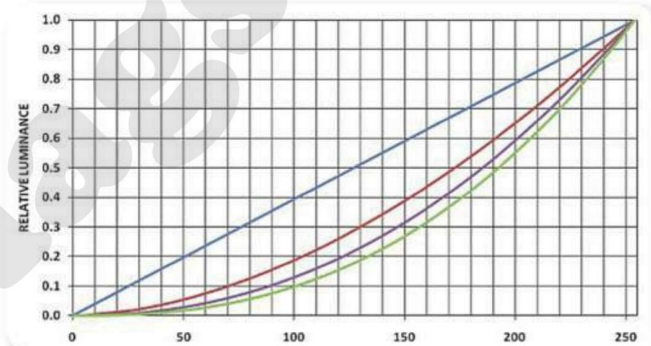


Calibration discs: Useful for testing gamma settings

this goes some way to explaining why different displays can make the same image look different.

To calibrate a picture perfectly, you would have to be able to adjust the gamma values, or response curves, for the red, green, and blue channels independently, and also adjust the RGB levels to set the 'white point' accurately.

If a TV has a gamma adjustment feature, it's usually just a choice of presets, and which you choose normally depends on the type of display. For instance, CRT is usually something between 2.2 and 2.5, projectors are normally 2.2, and LCD is normally 2.4 to 2.5. But since the TV's brightness and contrast settings can affect gamma response – and



lighting conditions in a room can affect the perceived gamma response – there's no definitively correct setting for every situation. So go with the default or middle gamma setting, as there should be few situations in which you have to select an extreme setting, other than perhaps if you were trying to run a projector in very brightly lit surroundings.

A medley of issues

I have the Panasonic TX-P55VT30B 3D TV connected via HDMI to a Pioneer VSX-LX60AV receiver, which also has a Pioneer DVR-LX70D DVD Recorder connected via HDMI. Does VieraLink work only if all the components are Panasonic, or does it work with other makes? Do you have any tips regarding sound dropout on Sky HD? This has been a problem for me since day one. Lots of people mention this problem on forums, but Sky just doesn't

Curvaceous: Gamma curves are non-linear

seem interested in fixing it. With all my other equipment I have no sound problems at all, only the Sky box whether connected via optical or HDMI.

Derek Moore via e-mail

Theoretically they should all be compatible, but in practice, you may find that some functions work and others don't. Sky HD sound dropouts seem to be due to the box's processor being underpowered, so there's no real solution. It seems to affect mainly surround sound services, and can often be improved by switching to stereo, though of course that's not a satisfactory solution.

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REVIEWS

→ **Hardware highlights** LG Flagship 55in Nano LED flatscreen with Passive tech
MONITOR AUDIO 5.1 Gold series array **PANASONIC** 3D home cinema projector and Freeview HD PVR/
 Blu-ray combi **SONY** Portable BD spinner **WHARFEDALE** Affordable 10in subwoofer **LOEWE** Debut
 3D TV from the bespoke brand **DEFINITIVE TECHNOLOGY** Wall-mountable flat speaker **AND MORE!**



Grand design

Denon's AVR-3312 packs plenty of features for its £1,000 ticket. Turn to p54 to see if its performance is up to scratch, too

HCC Ratings key

Outstanding	1 2 3 4 5
Above average	1 2 3 4 5
Acceptable	1 2 3 4 5
Disappointing	1 2 3 4 5
Dire	1 2 3 4 5

Passive effective has finally arrived



The LG delivers 3D images with
impressive brightness and little crosstalk



LG's debut Nano technology TV promises unrivalled LED pictures. **John Archer** discovers if that's the case



AV/CV

PRODUCT: A Smart LCD TV with direct LED lighting and passive 3D

POSITION: LG's flagship TV, sitting above the LW650T range

PEERS: Philips 46PFL9705; Panasonic TX-P55VT30

While it's now established that passive 3D technology is a great, family-friendly alternative to active 3D where 42in and possibly 47in screen sizes are concerned, I personally have had my doubts that LG's new 3D approach works on bigger screens.

My concern, based on experience of the brand's debut 3D TV, the 55LW650T, has been that the application of passive 3D's polarising filter over the front of such a large screen results in visible horizontal line structure and jagged edges. I also felt from my first head-to-head experience of 55in active and passive 3D TVs that such large screen sizes made passive 3D's slight loss of resolution more noticeable.

HCC has long been aware of my feelings. So it was with some surprise that I learned the magazine was sending me the 55LW980T rather than the 'safer' 47in version. However, it seems LG was merely being confident in submitting the 55in model, believing that it's got what it takes to win us over to the bigscreen passive cause.

Much of this bravado will stem from the fact that this is the first sighting of LG's Nano Full LED technology in the UK, an innovation that marries locally controlled rear-mounted LEDs (which ought to deliver superior pictures to the Edge LED competition) to a proprietary ultra-thin light dispersion filter. This is flagship engineering that LG has been previewing for a while, so it's good to see it finally arrive.

Of course, the 'Nano' 55LW980T wasn't originally intended to be a passive 3D TV at all. Initially, before LG realised it ran counter to its passive 3D marketing strategy, the Nano sets were going to be LG's only 2011 LCD models to carry active 3D. But at some point the passive

→ Specifications

3D: YES **Full HD:** YES 1080p/24

Tuner: YES **Freeview HD**

Component video: YES 1 x input

HDMI: YES 4 x v1.4

PC input: YES 1 x D-Sub

Resolution: 1920 x 1080

Sound: 2 x 10W RMS

Brightness: 450cd/m²

Contrast ratio: 10,000,000:1

Dimensions (off stand): 1265(w) x 760(h) x 27.5(d)mm

Weight: 23.8kg

Also featuring: Passive 3D playback with 7 pairs of glasses thrown in; pseudo 1000Hz processing; USB media playback; noise reduction system; DLNA streaming support; Smart TV online service; ISF Approved

44 REVIEWS

change was made and the decision has proved a master stroke.

Fully loaded

To kick off, the screen's design is a vision of premium excellence from head to toe. The sheet of glass that sits across both the screen and black bezel gives it a suitably opulent finish, especially with the way it continues beyond the black bezel edge for a few millimetres. Also impressive is how slim the set's rear is.

The 55LW980T is fully loaded when it comes to connections, too. The increasingly *de rigueur* four HDMI are here and naturally these are v1.4 for full 3D compatibility. Also of note is how much effort the 55LW980T puts in where multimedia is concerned. There's wi-fi, for a start, courtesy of a USB adaptor that comes included with the TV. This, or a LAN port if you'd rather, provides access either to files stored on a DLNA-ready PC, or to LG's extremely fast-growing Smart TV online platform.

There's also a D-Sub PC input for direct computer screen porting, and two USBs for either playing back a wide variety of video, photo and music file formats from USB storage devices, or for recording from the integrated Freeview HD tuner to USB HDDs.

The direct LED lighting system in the 55LW980T is, as mentioned, bolstered by local dimming, where separate clusters of the LED lights can be individually controlled. The benefits of this are that it allows the TV to have areas of near complete blackness and areas of extreme brightness on screen simultaneously, bolstering its contrast performance.

The 55LW980T has 288 separate areas of light control, which should prove enough to minimise the potential downside of local dimming whereby you can see haloes of light around bright objects. Toshiba, of course, has a screen with 512 areas of control, but isn't planning on bringing it to the UK. Spoilsport.

The local dimming also has the advantage of being driven by LG's most powerful processing engine yet, a system which claims to deliver a 'virtual' 1000Hz motion performance.

LG was one of the first brands to understand the benefits of adding extensive calibration toolkits to its TVs. So it's no surprise to find the flagship 55LW980T bagging the endorsement of the independent Imaging Science Foundation (ISF), and being endowed with a decent



Spare pairs:

The screen ships with no fewer than seven pairs of 3D spex – good enough for everyone but Snow White...

colour management system, gamma controls and extensive white balance adjustments.

Many of the processing-related features, particularly the noise reduction and edge enhancement tools, are best left off for most of the time. But using the TruMotion system on a light setting does little harm.

LG's 2011 TVs have seen the brand's Smart TV online service blossom remarkably fast. Video services include the Blinkbox TV and movie library, Autocar, a '3D Zone' of streamable 3D content, an ITN news

feed, YouTube, the BBC iPlayer, AceTrax, the HIT Entertainment channel, Box Office 365, the Cartoon Network, iConcerts and Daily Motion.

Also prodigious is the number of smaller 'apps' available, all of which are accessed via a slick 'shop shelf' visualisation. Most of these smaller game and infotainment apps are largely pointless, but you can stumble across the occasional treat if you look hard enough. Finally, the 55LW980T inevitably supports social networking, via Twitter and Facebook apps.

Plumbing the depths

As a fan of direct LED technology, I was really excited to find out what the 55LW980T's pictures could do. But actually, my first feeling was of slight disappointment.

The reason for this is that the 55LW980T can't produce quite the same black level depths I've witnessed on other direct LED TVs. Even with the set's backlight levels reduced quite sharply and local dimming on, there's still a residual hint of grey to dark scenes.

The local dimming engine doesn't start off well either, because the TV's default setting creates some clumsy 'haloing' around bright objects if they appear against dark backgrounds.

Thankfully, though, after a little experimentation with the different local dimming 'strength' options and the set's backlight setting, I finally ended up with more than satisfactory black level depth and haloing so subtle it was hardly ever visible.

From here on in the news is nearly all very good. Colours, for instance, are stunningly vivid and punchy, but also enjoy a huge tonal range, plus the sort of extreme subtlety of tone and blend that you only get with potent processing engines.

What's more, after a little work, these boisterous colours are able to coexist very happily indeed with decently rich blacks to create a fearsome contrast performance.

It's reassuring to note, too, during the nighttime scenes in Jane Foster's lab in the recently released *Thor* Blu-ray, that the 55LW980T is unusually good at retaining shadow detail during dark scenes, so that they appear to have as much depth (even in 2D mode) as bright scenes.

Fine detail levels with HD content are extremely high, leaving the picture looking crisp and textured. And the set is scarcely blighted at all by LCD's common motion blurring.

In fact, even though you don't immediately take it in, **the 55LW980T's superb handling of motion is possibly its single greatest achievement.** When it comes to motion processing, the trick is to do your work invisibly, so that motion just looks fluid and sharp, without the image looking processed or 'forced'. And in this respect the 55LW980T works brilliantly, even without engaging its TruMotion system.

With what's arguably LG's finest standard-def upscaling performance rounding out the 55LW980T's 2D efforts, it was with trepidation that I



One of two: This standard handset is complemented by LG's 'Magic' remote that gives you control by pointing the 'wand' at the screen or by using gesture controls

checked out its 3D capabilities. But my doubts were quickly laid to rest.

As soon as I'd donned a pair of 3D glasses (of the seven pairs included free with the 55LW980T), I found myself seriously taken by how bright, clear and immediate 3D images look.

This impression is mostly down to the fact that the passive glasses remove hardly any brightness and colour from 3D images, unlike their active shutter counterparts. This also helps dark 3D scenes retain more detail, and thus depth, than is common with active TVs.

There's also much less crosstalk than you still get with many active TVs. I can't quite concur with LG's claim that passive 3D is crosstalk free, but I did find that it rarely appears – and that's a godsend.

Indeed, it's probably because of this, together with the 55LW980T's retained 3D brightness and motion clarity, that its 3D images can look sharper than those of many supposedly active 3D TVs.

I also discovered that I could watch the 55LW980T's 3D pictures for noticeably longer than those of active 3D TVs without feeling tired.

This doesn't mean that passive's 'problems' have disappeared. You can still make out traces of horizontal lines across very bright images, and bright edges do generally look jagged, most notably if there's a very shallow curve to an edge.

The image descends into a crosstalk frenzy, too, if you watch it from more than around 13° above or below the screen, and there's still a small degree of source detail lost with passive 3D.

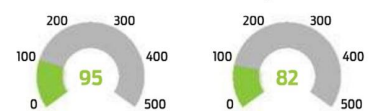
Won over

However, the sort of problems I'm describing reduce the further you move from the screen, so if your room is large, their impact will be minimal. More importantly, it seems to me as if the outstanding quality of the 55LW980T's core TV engine means that the strengths of its 3D efforts are much more in the ascendancy than its weaknesses, and it's this more than anything else that's finally got me onboard with big-screen passive 3D.

In fact, with some unexpectedly potent audio joining the huge and excellent 2D and 3D pictures, I have no hesitation in declaring the 55LW980T not only the best flat TV LG has ever made but one of the best 3D TVs yet from anyone. And it doesn't use Active Shutter tech – I think I need a lie down.

Tech Labs

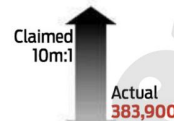
Power consumption: Watts



White screen: A few years ago, a 55in LCD using only 95W would have been unheard of

Test footage: With movie footage, consumption averages 82W, with a low of 52W. Very efficient

TV Contrast: Ratio



Picture: An excellent real world measurement, with a startling luminance of 112fL in Standard mode. Post calibration yielded 32,700:1, with a luminance of 76.5fL

Colour temp: Kelvin



Presets: Of the standard presets, Cinema is the most accurate – but we had little trouble achieving 6,500K using the Expert modes
Vivid: 12,400K
Standard: 8,200K
Cinema: 6,200K
Game: 8,600K

Onscreen: Menu



No place like home: The TV's home screen acts as a gateway to setup options, media streaming, VOD and apps. Clean and uncluttered, it's one of the best around



HCC VERDICT

LG Nano 55LW980T
£2,500 Approx

Highs: Good design and build; massive feature count; good online service; excellent 2D and 3D pictures

Lows: Limited vertical viewing angle for 3D; occasional 3D crosstalk

Performance: 1 2 3 4 5

Design: 1 2 3 4 5

Features: 1 2 3 4 5

Overall: 1 2 3 4 5

Setting the Gold standard



Adam Rayner takes Monitor Audio's Gold series cinema speakers for a spin

AV/CV

PRODUCT:
5.1 cinema
package for
serious AV hedz

POSITION:
Named for
precious metals,
so this is one
series down
from the
Platinum range

PEERS:
Bowers &
Wilkins CM9;
JBL LS Series;
ATC Concept 3

Our younger readers might laugh about this, but in the olden days, there were businesses that existed that would rent you a TV. As long as you stayed signed up you always had the latest model – and when the TV died the rental company gave you a new one and you could dispose of the old one as you wished. Good for me – I was allowed to break them up in the garage. While my folks reckoned it would be 'educational', I loved the nihilistic destruction of taking it apart bit by bit, unravelling coils of wire and ending up with a lump of magnet, way stronger than that I had in my 'Fun With Magnets' set.

These magnets were the heart of the telly's loudspeaker, which had to be powerful to compete with the market and thus used a more costly magnet, with higher flux density than could be used in toys. It's still the case today. I have experienced a Neodymium magnet from a driver that I was literally unable to prise it from the steel shelving it was clinging to.

Early TVs had to be twiddled with a dial to get the stations and had actual numbers printed on – now look at them. The same technology growth applies to speakers. Advances in materials science, and the electro-mechanical engineering that these new materials engender (Kevlar, Neodymium, Carbon Fibre and just right now, Graphene), mean that in one lifetime you can hardly recognise the old scenario.

What we have here, in the shape of Monitor Audio's Gold Series, is as 21st Century as you could wish for, with performance

figures and specifications that would have literally boggled an expert 20 years ago. In fact, they might not have believed you.

Monitor Audio has a real fan base that loves its kit and knows that even at the entry-level, the product line called Bronze, the sound will be clean and will exhibit tremendous accuracy of sound stage and placement.

I wasn't too keen on those myself, as at their price point, I would have been shopping for max volume and

impact and size rather than looking for refinement.

This 5.1 array is the newest of the Gold series, sub-dubbed GX to distinguish from previous incarnations, and their place in life is to be first in line to inherit the mad-end technology developed for the HCC award-winning Platinum series. Thus, for what is still arguably a fat slice of money, you get nearly all the fabulousness of the even costlier top-end Platinum series, just a year or so later and not having to pay for the R&D costs.

These speakers drip with technology. First there are the C-CAM RST drivers. C-CAM is Ceramic Coated Aluminium Magnesium alloy. It's very light and stiff and will act in a pistonic fashion with no flex and break up helped by the Rigid Surface Technology. This is a super light alloy, with a layer of ceramic to stiffen it, and a series of raised ribs in the surface to resist flexing under drive and thus non-piston behaviour.

I believe, and I was production manager of Acoustic Energy at the time (and Monitor Audio's Mo Iqbal had licensed his tweeter to be in the AE1) that the metal C-CAM material development came about because of the AE patent.

AE's BIG patented secret is soft spun aluminium in a cone shape (far too soft yet to be a speaker cone) which is hard-anodised both surfaces – just like the lining of a race car engine cylinder – to make a tri-layer-composite of immense rigidity.

But C-CAM has come so very much further. Where AE still has the same 5in driver and has gone up to an 8in in the metal cone tech they use, Monitor Audio offers a Dustbin Lid From Hell in the shape of the mighty 15in C-CAM piston hiding behind the grille of the very clever and technically equipped subwoofer in the line up for GX, the GXW15.

And it doesn't stop there with C-CAM, for the Holy Grail of filtered-down technology with the Gold GX is their odd-looking tweeters. These are not domes, but flat slices of this super rigid C-CAM that actually hang suspended in a magnetic field of a pricey Neodymium-Ferrite-Boron magnet. The teeny sliver weighs



Tech choice:

The GX300 floorstanders (left) can be bi-wired; the GXFX rears (right) can be used as dipoles

hardly anything and as such can accelerate rapidly to change direction and reproduce tones up to 60kHz.

And what does all this high-falutin' technology mean to your audio experience? It means a set of bass and midrange drivers with low power compression and tweeters that sing with amazing grace.

Dipolar disorder

For my I audition I had the towering GX300 three-ways floorstanders, a centre called GCX 350 (the bigger of two offered in Monitor Audio's range) with the same four drivers on board, and a pair of GXFX rears that have dipole along-the-walls drivers – two small C-CAM mids and their regular Gold dome tweeters – on each end, as well as a ribbon tweeter and a mid-driver in their front faces. You could switch from dipole to monopole by a switch on the front, or more cunningly – and perhaps more for the home automation-heavy USA market – they have 12V trigger switchability too, with extra 12V terminals on their rears to connect a wire to. Annoyingly, though, the GXFX don't sport the seductive magnetic grilles of their sibling speakers.

The subwoofer has some real DSP smarts and a self-EQ system which works well. You can choose up to a wall-like 24dB of crossover slope too, which is rare.

I lived with these speakers for nearly a fortnight, and fell into a pattern of rewatching the recently-

purchased BD of *Pirates Of The Caribbean On Stranger Tides*.

The dialogue in the movie's opening scene – 'How soon can you sail?' 'With the tide...' is followed by a long and loud triangle note... TINNNNNNG! And so help me, from that note these Monitor Audios place you right inside the film. The sheer delicate richness that these five tweeter ribbons can raise, partly due to their reach up, but also to their reach down, since they have a very wide passband, made for a princely presentation.

At the other end of the spectrum, the GXW15 woofer just drops and drops. While it isn't as fast as, say, the B&W DB1, it has scale, might, majesty and melodic ability too, due to the huge amp inside. The system can thus create the scale the Bronze array cannot do and are close to the rare high-fidelity cinema thrills that the Platinum series presents. For me, this makes the GX product a clever spend.

Running through *Pirates...* had me scribbling all sorts of notes ('huge, rich, foundation-shifting bass with power and grip'; 'nil flex on the 15in piston'; 'Exciting, musical and able to create a sense of scale'), but all you need to know is that I loved this system with a passion. It's a lovely looking set, with such a fabulous sound that the £7,000 ticket still feels value for money – although personally I would have saved £150 by opting for the standmount GX100 rears over the GXFX wall-huggers ●

→ Specifications

Monitor Audio GX 300

Drive Units: 2 x 6.5in C-CAM Ceramic-Coated Aluminium-Magnesium alloy RST bass drivers; 1 x 4in RST C-CAM midrange driver; 1 x C-CAM ribbon tweeter
Enclosure: 3-way rear-ported
Frequency Response: 30Hz-60kHz
Sensitivity: 90dB
Power Handling: 200W
Dimensions: 317(w) x 1105(h) x 370(d)mm **Weight:** 27.2kg

Monitor Audio GCX 350

Drive Units: 2 x 6.5in C-CAM RST bass drivers; 1 x 4in RST C-CAM midrange driver; 1 x C-CAM ribbon tweeter
Enclosure: Three-way sealed
Frequency Response: 40Hz-60kHz
Sensitivity: 90dB
Power Handling: 200W
Dimensions: 390(w) x 254(h) x 168(d)mm **Weight:** 9.9kg

Monitor Audio GXFX 300

Drive Units: 1 x 6.5in C-CAM RST bass driver; 2 x 4in RST C-CAM midrange drivers; 1 x C-CAM ribbon tweeter and 2 x C-CAM dome tweeters
Enclosure: Two-way, sealed monopole/dipole, switchable by front switch or by 12V trigger signal
Frequency Response: 60Hz-60kHz
Sensitivity: 87dB
Power Handling: 100W
Dimensions: 390(w) x 310(h) x 168(d)mm **Weight:** 11.9kg

Monitor Audio GXW15 subwoofer

Drive Unit: One 15in C-CAM Ceramic-Coated Aluminium-Magnesium alloy driver with triple suspension
Enclosure: Sealed cabinet, 1in MDF construction with internal bracing and sealed amp compartment
Frequency Response: 18Hz-120Hz
On board power: 650 RMS Class D amp
Dimensions: 400(w) x 430(h) x 400(d)mm
Weight: 35.3kg
Connections: Stereo phono in/out; phono LFE in/out; 12V trigger; 3.5mm for setup mic



HCC VERDICT

Monitor Audio GX Series 5.1
Approx £7,150

Highs: Rich, accurate texture to upper mids and highs; potent subwoofer; high-quality build and finish

Lows: Dipole/Monopole FX rears are costly and lack the magnetic grilles of the rest

Performance: 1 2 3 4 5

Design: 1 2 3 4 5

Features: 1 2 3 4 5

Overall: 1 2 3 4 5

DON'T LOSE A NOTE OF THE ORIGINAL

With the UD7006 Blu-Ray Player

"The UD7006 is a master of all trades – including 3D"

The UD7006 is our very first 3D capable Blu-ray Disc player that combines HD surround sound with 3D picture. But not only that, it is also DLNA1.5-certified, which means it can stream audio and video stored on your home network. Also, to ensure top audio quality, it includes a special decoder for HD sound formats and uses a 32-bit audio DAC with 7.1 analogue channel out.

What Hi-Fi? Sound and Vision (July 2011)



Welcome to the extra dimension

In striving to produce a good 3D projector, Panasonic has actually delivered a brilliant 2D one, reckons **John Archer**

From the moment I first saw Panasonic's new PT-AT5000 3D projector running alongside its AE4000 predecessor at a swanky launch event in Los Angeles, I knew it was going to be something special. Though not necessarily because of its headlining 3D talents.

For during this demo it seemed that the technological advances demanded to deliver convincing 3D pictures (see page 54) had led to Panasonic delivering a quantum leap in its 2D performance, too. And this first impression still holds true now that I've managed to get the machine ensconced in my own test room.

Thankfully, the AT5000 isn't as dog ugly as its bizarrely industrial-looking AE4000 predecessor. And while it is unlikely to wind up at any 'industrial design' award ceremonies, it's slimmer, more attractively finished and more curvaceous than the brick-like

older sibling, allowing it to integrate much less discordantly with your home's decor.

Trigger happy

The AT5000 is extremely well connected by projector standards,

thanks predominantly to its provision of a pair of 12V trigger outputs and three HDMI's, where most projectors (even many costing five figures) only manage two. These HDMI's are all built to the 3D-friendly v1.4 spec.

Style update: Panasonic has ditched the biscuit-tin approach

→ Specifications

3D Ready: YES, Active Shutter
Full HD: YES 1080p24
Component video: YES 1
HDMI: YES 3 (v1.4)
PC input: YES (D-Sub)
12V trigger: YES 2
Resolution: 1920 x 1080
Brightness (claimed): 2000 Lumens
Contrast ratio (claimed): 300,000:1 dynamic
Dimensions (max): 470(w) x 137(h) x 345(d)mm
Weight: 8.7kg
Features: 3D parallax and colour balance adjustment; extensive colour/white balance/contrast/gamma calibration aids; Waveform monitor; vertical and horizontal image shift; 3D transmitter built in; 200W red-rich lamp; 480Hz panel drive; intelligent lens memory; 22dB fan noise; 4,000 hour lamp life



Good work:

Weighty, well backlit and sensibly organised, with no more buttons than you really need. Nice



Turning to the AT5000's front, a little flap-covered compartment to the right of the lens contains two items of interest: a built-in 3D transmitter and an unusual joystick-style system for optically shifting the picture horizontally or vertically.

The transmitter worked adequately well during my tests, though if you've got a large room or lots of pairs of glasses to 'feed', you might well need to stump up for one of Panasonic's optional extra external transmitters.

The joystick image shifter certainly did not work adequately well during my tests. It's horribly insensitive and refuses to move until you apply lots of pressure, but then it suddenly shifts extensively, making small adjustments hard to achieve. It's bizarrely imprecise for a projector that offers so much subtle fine tuning in so many other areas.

For instance, the AT5000 offers a really extensive range of adjustments for tweaking colours, contrast, white balance and gamma levels, along

with some unusually sophisticated displays for monitoring the results of your labour. The WaveForm monitor, in particular, is something that's only normally seen in a lab rather than being available for end users to study, depending on your level of technical knowledge.

Actually, quite a few of the AT5000's set-up tools will likely be beyond the comfort zone of most of the people who buy one. So **it's reassuring to discover that the picture presets – at least the Cinema ones – are pretty good, meaning you don't necessarily have to muck about with the finer points of calibration at all** if you don't fancy it.

One last feature of the AT5000 that should be mentioned before checking out its headlined new 3D talents is its lens memory function. This neat trick can store different zoom and focus settings for different film aspect ratios, so you don't have to manually configure the settings

yourself each time you want to switch between, say, a 2.35:1 and a 1.85:1 ratio film.

If this feature interests you, though, you should be aware that it doesn't work for 3D, though.

With Panasonic's pre-launch claims that it didn't want to release a 3D projector until it was happy with its quality ringing in my ears, I fired up *Tangled* and *Avatar* on 3D Blu-ray. And for the most part, I was more than happy with what I saw.

Colour calibration

For a start, the AT5000's 3D images look chock full of HD detail, easily delivering the resolutions the active 3D format was expressly designed to handle. The projector's 3D picture settings also benefit from some obvious care on Panasonic's part when it comes to calibrating the AT5000's colour settings to compensate for the impact of the brand's 3D glasses. Colours in both animated and filmed 3D scenes look strikingly natural, as well as enjoying

AV/CV**PRODUCT:**

Full HD, high contrast LCD projector that supports active 3D playback

POSITION:

Currently Panasonic's only projector

PEERS:

Sharp XV-Z17000; Sony VPL-HW30



WARNING: DO NOT LOOK INTO THE LENS.
AVERTISSEMENT: NE PAS REGARDER À TRAVERS LA LENTILLE.
WARNUNG: NICHT IN DIE LINSE SEHEN.
ПРЕДУПРЕЖДЕНИЕ: НЕ СМОТРИТЕ НА ОБЪЕКТЫВ.
경고: 사용 중에 렌즈를 들여다 보지 마십시오.
TQF0261

A little help from Hollywood

John Archer goes ga-ga in La-La land over Panasonic's 3D projector technology – and thinks the wait may have been worth it

Panasonic was the driving force behind the full HD active 3D format that's been changing the way some of us watch TV for the past two years. And Panasonic has made uniformly good home cinema projectors popular for way longer than that. So why in the name of all things AV has the brand taken so long to bring these two key parts of its business together to make a 3D projector?

This was the first question burning my lips as I travelled to the launch event for Panasonic's PT-AT5000 3D projector. And the answer from Senior product manager, Rena Yotsu, was solid if predictable: 'We wanted to create a premium quality product that was in keeping with Panasonic's uncompromising approach to 3D. We didn't want to go out at a premature stage – we wanted to be safe.'

Some muffled chatter and shuffling of feet from Panasonic's technical people at this point made me wonder if this was the full truth behind the delay. But hey – all that really matters, I guess, is that the PJ is here now.

My first glimpse of the PT-AT5000 is in the Panasonic Hollywood Laboratory, set in the grounds of the Universal Studios lot in the home of movies, Los Angeles.

This site is in many ways the spiritual Western-world home of both Blu-ray and, more recently, 3D technology. And Panasonic has taken full advantage of its Hollywood location in developing the AT5000, getting advice and calibration assistance from various film industry people – including cinematographer Steven Poster (*Donnie Darko*),

who's on hand to address us at the launch.

Poster, as well as praising Panasonic for working with experts from the film industry in 'tuning' its projectors, is clearly a fan of the AT5000.

'I was frankly pretty amazed at the quality I was seeing on the screen in 3D,' he told me. 'The brightness, the lack of crosstalk... the overall quality didn't take me out of the experience of watching the movie. You don't want audiences to think 'oh, I'm wearing glasses and I'm looking at 3D'. You want them to be immersed in the material. And that's the experience I had with this projector.'

Optical collusion

Achieving such results has involved an array of technical developments – the AT5000's optical heart is radically revamped from that found in Panasonic's previous, 2D-only AE4000 projector.

The most predictable change, given that the AT5000 uses full HD active 3D technology (which tends to reduce brightness) is the upping of the maximum brightness output to 2000 ANSI Lumens.

Critically, though, this has been joined by a claimed leap in contrast, with the AT5000 quoting a 300,000:1 contrast ratio twice that of the AE4000. This is attributed to the use of the latest LCD chipsets, and a new, faster-responding and more sensitive dynamic iris design.

As regular readers will know, good quality 3D isn't just about brightness. It's also about speed, in order to avoid that most dreaded of 3D flaws, crosstalk noise. Hence the AT5000's LCD panels are driven at a lickety-split 480Hz.

Yet Yotsu reveals this speed has another benefit: 'Running the panels at 480Hz means you are able to have a better aperture on your active shutter glasses, so that they open up for a longer period of time.' This, of course, results in brighter 3D pictures.

The AT5000's 3D innovations also extend to some of the options available in the projector's onscreen menus. Particularly intriguing is the way the projector can account for the fact that different screen sizes ideally require different 3D parallax levels if they're to remain comfortable to watch.

This feature presents an onscreen graph of the ongoing parallax level of the 3D source, as well as fixed upper and lower parallax 'tolerance' lines reckoned to represent comfortable 3D viewing at a particular screen size. Should the parallax level of the film seep beyond the tolerance extremity boundaries, then you're potentially getting a fatiguing 3D image. If this happens, you can adjust the image's convergence point on the projector so that parallax levels stay within the 'comfort zone'.



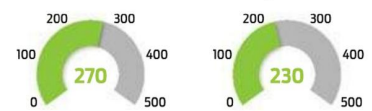
Projector specialist:
Senior product manager Rena Yotsu

In the lab:
Panasonic's PHL facility



Tech Labs

Power consumption: Watts



White screen:
Quite a high power consumption with our 1000IRE screen, indicative of the PJ's brightness

Test footage:
Significant drift with movie material, from as low, averaging at 230W

TV Contrast: Ratio

Colour temp: Kelvin



Picture: An excellent contrast measurement with a high brightness of 25.9fL. Dynamic mode increases contrast to 123,000:1

Presets:
Cinamal and D-Cinema modes get nearest to 6,500K.
D-Cinema: 6,000K
Cinamal: 7,000K
Cinema2: 7,600K
Game: 9,100K
Dynamic: 8,100K



Three amigos:

The AT5000 offers a very generous trio of HDMI inputs, plus two 12V triggers

more blend and tonal shift subtleties than usual.

Motion looks fluid but believable in 3D mode too, be it motion across the frame or in and out of the depth of field.

Talking of depth, there's always a really palpable sense of '3Dness' to the AT5000's 3D pictures, avoiding the slight lack of depth seen with some 3D displays. The image's sharpness helps underline the sense of depth too, as the crispness with which different objects are rendered helps your eyes correctly define their relative positions in the 3D field.

The AT5000's 3D images are respectably bright and vibrant compared with those of other similarly priced 3D projectors. What's more, the AT5000 runs surprisingly quietly even when it's having its lamp worked hard by 3D playback, revealing how efficient Panasonic has been with the AT5000's heat management.

Many of the 3D-related innovations Panasonic has introduced for the AT5000 have been concerned with suppressing that trademark active 3D problem of crosstalk noise. So it's a touch disappointing to find that there is still some evidence of the double ghosting noise over 'classic' scenes such as the lantern sequence in *Tangled* and *Avatar*'s early classroom scene.

It's fairly subtle, though, and doesn't prevent the 3D image's sharpness from being the defining part of your viewing experience.

On the other hand...

Now, having just said that the AT5000's 3D brightness is quite good, I'm now going to confuse the heck out of you by saying that it's also a bit disappointing.

The thing is, while the AT5000's 3D pictures look bright enough

compared with other 3D projectors, they look positively muted when compared with the phenomenal 2D pictures it produces.

I for one had been quite impressed with the 'punch' of the AE4000's images when that model came out in early 2010. But the AT5000 looks like a qualitative leap rather than evolutionary step on from its predecessor, so intense are its colour saturations, so bright are its peak whites and so expansive is its contrast range.

It's not just the new brightness and colour punch that explains the obvious contrast boost either. For the AT5000 also delivers hugely improved black levels. Indeed, **the depth of blackness it can render without crushing out shadow detail are the best I've seen from any LCD projector**, even outgunning the efforts of Epson's superb TW5500.

There were moments where I actually felt as if the AT5000's 2D pictures were too good. Why? Because I was so taken with their brightness and dynamism that I found myself sometimes reluctant to sacrifice either of these attributes to the extent required by the projector's 3D mode.

Whatever 'philosophical' debates the AT5000 might unwittingly raise about the attractiveness of 3D viewing versus the attractiveness of high-quality 2D viewing, though, it's a simple reality of home cinema life that even the most die-hard of 3D fans will still spend the majority of their time watching 2D, simply because there are so many more 2D sources. So the benefits reaped by 2D from Panasonic's 3D-related improvements are most definitely a cause for serious, air-punching celebration rather than any sort of misplaced concern. Grab a demo of this PJ now – you'll be impressed ●



HCC VERDICT

Panasonic PT-AT5000
£3,200 approx

Highs: Good 3D pictures; quiet running; loads of set-up features
Lows: Some crosstalk; fiddly optical image shift system; big drop off in brightness moving to 3D

Performance: **1 2 3 4 5**

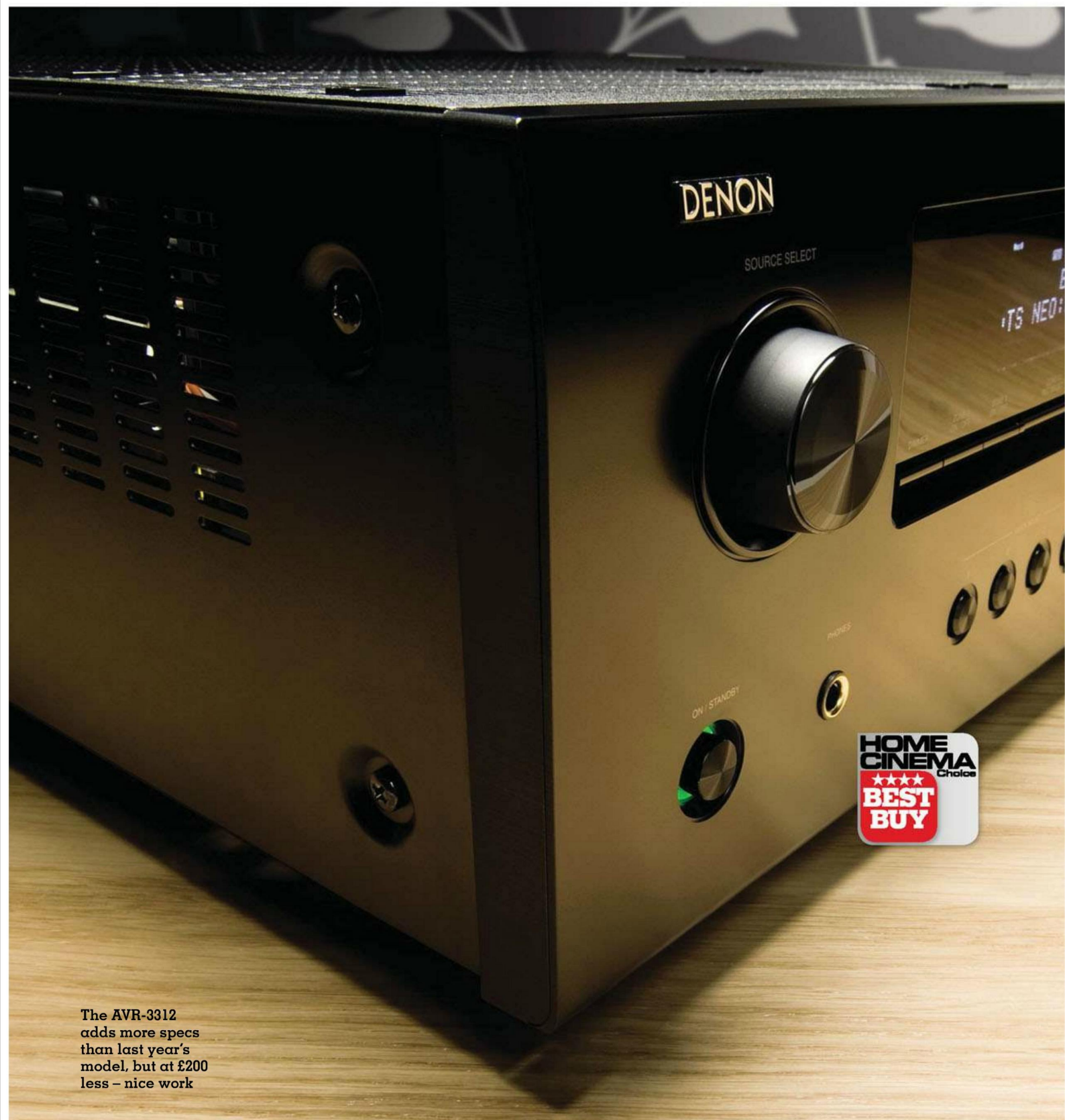
Design: **1 2 3 4 5**

Features: **1 2 3 4 5**

Overall: **1 2 3 4 5**

A grand well spent

Richard Stevenson revels in the sheer power and shower of features that make Denon's latest receiver offering value for money



The AVR-3312 adds more specs than last year's model, but at £200 less – nice work

I must have been snoozing last year as I missed Denon's AVR-3311 completely. That well specified £1,200 receiver forms the base on which the AVR-3312 is built, updated and refined. And it's damn fine news for potential buyers that this year's contender comes in £200 cheaper. Where the money has been saved is a mystery. The new kid gives little away to the old guard, boasting all its

AV/CV

PRODUCT:
Power-packed
network receiver

POSITION:
Top of Denon's
AVR-xx12
7-channel
receiver lineup

PEERS:
Pioneer
VSX-2012;
Onkyo
TX-NR809;
Yamaha
RX-A1010

power and features, and adding more networking and HDMI's, AirPlay as standard and a new set-up wizard.

Built on a 7x125W chassis with discrete components throughout, the AVR-3312 offers processing for every movie sound format you care to think of. It backs this with seven v1.4 HDMI inputs, including one on the front fascia, and dual HDMI outputs for multiroom or multiple displays. Dolby ProLogic IIz and Audyssey DSX processing enable you to assign the amp channels to height or width duties, and there are dual sub outputs for those who like their LFE doubly firm and fruity. Power and processing are all but unchanged from last year's model – Denon has instead concentrated on improved usability.

On the fascia you now get four assignable quick select buttons for frequently used sources and four customisable presets. The single supplied remote control has a rather US-centric feel with graphic icons replacing text legends on many buttons. Like all AVRs these days, the supplied remote is a step backwards from previous incarnations that featured luxuries such as EL backlit displays. The reason is simple; the AVR-3312 can be controlled by Denon's slick remote control App, currently available for Apple devices with an Android version imminent.

Set-up whizz

The user GUI retains much of the mechanics of previous Denon systems, but has been significantly revamped to make it both prettier and more useable. It's slick, colourful and can be overlaid on content in the background. A wizard now leads you step by step through every aspect of the setup with consummate ease. Even a complete newbie to AVRs could set up the AVR-3312 in minutes, as each stage is mapped out in detail with directions as specific as diagrams indicating where precisely to put the set-up mic during installation. It's so easy your elderly mum could do it, although no elderly mums were available at time of review to test that theory.

Denon was one of the first brands to get into bed with Apple's AirPlay. It was a £40 extra on the AVR-3311 and is now standard, which again makes the AVR-3312 look even better value. This streamed music from an iTunes library easily the first time I set it up, complete with album artwork, but things got a little more flakey

with AirPlay as time went on. Despite repeatedly turning bits of kit on and off, AirPlay from an iTunes server would not override net radio on the network input, but would if streamed direct from my iPhone. I can't work out whether this is a Denon issue or my network, but I do think the AVR-3312 lacks a single source select button that says simply 'AirPlay'.

Walk in the park

I found most of the AVR-3312's other network features a breeze, including accessing DLNA-equipped libraries, net radio and the new web browser set-up interface. This is simple and comprehensive and I can see this being useful for installers to remotely reset and re-tune features that their customers have messed up. Can't think of any personal use for it, though, short of remotely turning on the radio for the dogs while I am out.

Add to this the AVR-3312's direct access to Flickr, LastFM and Napster accounts and you have a very comprehensive media hub in your living room. Given my recent power consumption issues (see Point of View on page 114) Denon's 0.1W standby power is also a very welcome addition.

After a basic run of the Audyssey MultEQ XT system, the AVR-3312 came firing into the room with all guns blazing and a Denon badge tattooed across its metaphorical chest. The sound is big, bold and robust with a soundstage that offers crushing presence and gizzard-wrenching attack. It actually reminds >

Every picture tells a story:

Denon's handset uses graphic icons to denote different sources



→ Specifications

Dolby True HD: YES and DD Plus, DPL IIz

DTS HD Master Audio: YES and DTS 96/24

Multichannel input: NO

Multichannel output: YES 7 x 125W
Multiroom: YES 2 zones (one audio only)

AV inputs: YES 5 x composite, 2 x S-video, 2 x optical and 2 x coaxial digital audio

HDMI: YES 7-in 2-out, v1.4

Video upscaling: YES to 1080p

Component video: YES, 2-in, 1-out

Dimensions: 435(w) x 382 (d) x 167(h) mm

Weight: 11.8kg

Features: Ethernet; FM/AM radio; vTuner; AirPlay integration; Denon Remote App for iDevice and Android; preset buttons; setup wizard; new GUI interface, Last.fm, Napster and Flickr access; direct iPod via USB; Audyssey dynamic EQ; AL24 processing, Audyssey DSX; Audyssey MultEQ XT RoomEQ; low power standby of 0.1W; WMA, AAC, MP3, FLAC HD and WAV support on USB



Digital age:

How long before we see these analogue inputs start to disappear

me of the Denon AVR's of a few years back, which were all bristling muscle and brawn with a subliminal threat to eat small children. The AVR-3312 is a monster-sounding receiver with a huge weight and a top-end edge that really drives high-frequency effects. The flip side is that it is a little dirtier in its presentation. It's a little more edgy and occasionally oppressive compared to some of the more delicate and detailed sounding receivers out there.

Pirates of the Caribbean: On Stranger Tides thunders into the room with a weight and substance that lesser amps can only dream of. With the Audyssey engaged, the movie rips along at a pace, with big sweeping pans and bold effects that go some way to masking the film's complete lack of cogent plot.

Life aquatic

Running in full-phat, 7-channel mode, you quickly start to feel that your sofa is all at sea, with a festival of watery effects panning in all directions. As Jack Sparrow clicks the chalices together at the fountain of youth (for no reason that's easy to explain) the impact has amazing dynamic power, so that a drawn-out ring sent every piece of glassware in the house a-rattling. As water sweeps into the chamber, the sound swells into a crescendo of action, complete with the fine detail of birds flapping and tweeting as they escape from the scene.

The ensuing fight scene by the chalice is an adrenaline-fuelled surge of swift, dynamic and powerful sound. The scene is fully knitted together sonically, putting you firmly in the middle of the scene. Yet there certainly isn't the airiness or spaciousness to the sound that models such as Pioneer's VSX-2012

offer, and mid-combat dialogue can struggle to achieve clarity above the thunderous effects.

The deep bass pulse as Sam Claflin runs back to save the mermaid Syrena has the sub working hard and endangering the structural integrity of the building. But moments later, against the effects and fight scene, the dialogue is again lost in the mix. Adding 1dB or 2dB to the centre level helps, but the boisterous balance of the AVR-3312 doesn't offer the very best in dialogue articulation.

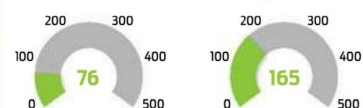
The moody *Let The Right One In* (original Swedish version) is a vampire flick that redefines the genre with subtlety and ambience. The Denon's heavy balance results in thoroughly intense drama. Every effect is nailed home, from doors opening to the sound of wind in trees. **The Denon will have you sitting on the edge of your seat by really playing to this movie's huge dynamic range.** From silence punctuated by foot falls to the sudden impact of Eli leaping down onto a victim, it will have you jumping out of your skin. Take away the rowdy orchestral and effects-led backdrop of the *Pirates* movie, and you get dialogue that's expressive and solid.

Power and the glory

The AVR-3312 has bags of the power, passion and charisma that have underpinned the brand's AVR sound almost since AV receivers were invented. Add to this a stellar selection of features and class-leading connectivity and you have a formidable contender at the price. While there are more neutral and spacious AVR's out there, few present movies with quite the weight and adrenaline gusto of this Denon.

Tech Labs

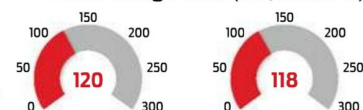
Power consumption: Watts



Idling: As Richard Stevenson knows, try not to leave your AVR idling away too often – this Denon sucks 76W when it's ticking over

Powered: Real world consumption averaged out at 165W

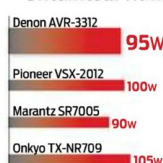
Power ratings: Watts (8Ω, 0.5% THD)



2-channel 8Ω: A solid two-channel measurement, just under Denon's own specification

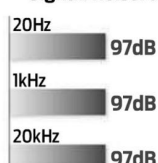
5-channel 8Ω: Very little drop off in amp power in-five channel mode

Untainted: Watts



Fidelity firewall: A measurement of power untainted by distortion (0.02THD, 8Ω, 1kHz), the Denon is eclipsed by some of its more affordable rivals

Signal/noise: dB



S/N tests: Superb signal/noise figures across the frequency range

Onscreen: Menu



Setup wizard: It's not exactly an oil painting, but Denon's new onscreen setup guide is easy to get to grips with



HCC VERDICT

Denon AVR-3312
£1000 Approx

Highs: Huge sound; AirPlay as standard; packed with features; easy to use

Lows: Not as spacious sounding as some; fierce competition

Performance: 1 2 3 4 5

Design: 1 2 3 4 5

Features: 1 2 3 4 5

Overall: 1 2 3 4 5

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* Requires mobile data plan, mobile broadband or Wi-Fi and the SlingPlayer Mobile app - sold separately. See www.slingbox.com for more information. You must connect your Slingbox® or HDS-600RS to the Internet via your broadband router to watch your TV anywhere.

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Sony frees Blu-ray

In this age of tablets and video streaming is there still room for a portable Blu-ray player? Sony thinks so. **Steve May** takes some BDs on the road

If you've been building a collection of Blu-ray discs you may well be wondering how you're going to watch your movies on the move. Ripping BDs is impractical and, despite a great deal of puff, digital lockers have yet to open for business. Enter the BDP-SX1, Sony's first stab at a transportaBlu.

Double-jointed

The BDP-SX1 may well seem chunky, but it's not without flexibility. The non-reflective 10in screen swivels 360° and can lie flush against its own lid. Panel resolution is a decent 1024 x 600.

The BDP-SX1 can also be plugged into a home system, just like any regular Blu-ray deck. A regular size remote control is also supplied.

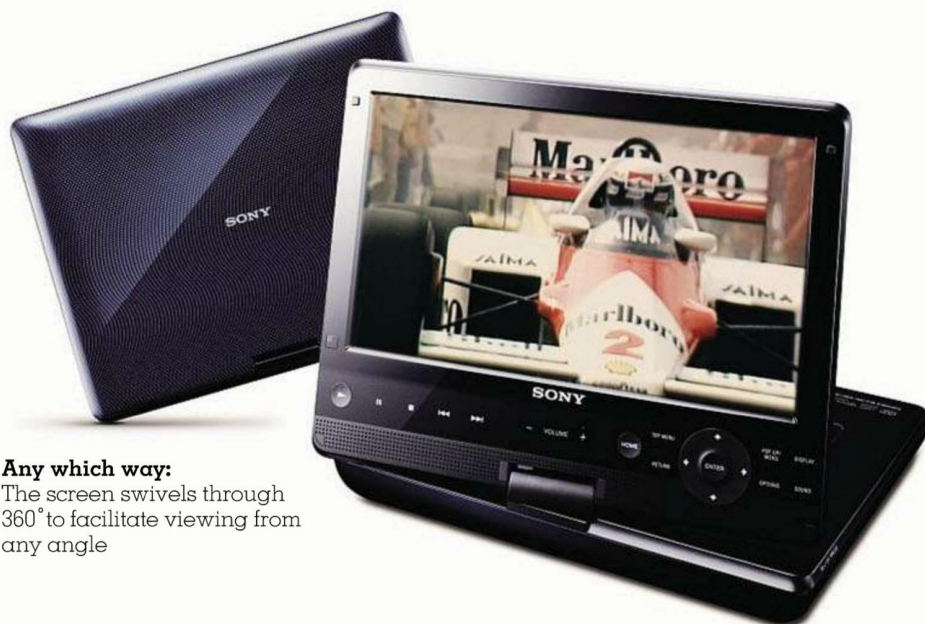
As an HDMI-connected source, the player behaves much like any regular Sony Blu-ray player, although it's not compatible with SACDs. You can output at 1080/24p as well as 1080/60p and 1080/50p, and audio can be bitstreamed (as DTS HD MA, Dolby TrueHD etc) or taken as LPCM.

However, not many would choose to use the BDP-SX1 over a conventional deck. The unit has no IPTV functionality and it's unrelentingly noisy, grinding horribly when asked to find chapters or access special features.

The player has no persistent memory for BD Live applications either, but this is unlikely to prove an issue for travellers. If you do need memory, provide your own with a 1GB USB thumb drive.

Portable picture quality is Walkers crisp, although WSVGA resolution on a screen of this size make Blu-rays appear only moderately sharper than they do on DVD.

The motion picture resolution of the panel itself is limited to around 400 lines. There's no high-powered image processing tech onboard, although you will find the usual backlight, contrast, hue and colour variables in the picture menu.



Any which way:

The screen swivels through 360° to facilitate viewing from any angle

AV/CV

PRODUCT:
Portable
Blu-ray player

POSITION:
Sony's only
portable BD
offering

PEERS:
Philips PB9001;
Panasonic
DMP-B200EB-K

Video is overscanned as standard – and there's no viewing mode to put this right.

Beware the mini-jack I/O though. While it's useful to route video into the device, screen resolution drops to a fuzztastic 480p. And this restriction applies equally to the HDMI output. You'll need to keep the analogue I/O clear if you want the best picture both onscreen and out.

This portable can also be used for multimedia playback, the USB reader being compatible with a wide variety of video file types and formats.

The integrated speakers are ghastly, but the dual headphone outputs should keep passengers happy on long car journeys.

Battery life is immense. The player can run for five hours straight, enough for two helpings of *Avatar*. It also has a helpful Resume Playback option.

A modern spin

Overall, the BDP-SX1 offers enough modern functionality to keep the concept of a portable disc-spinner alive. It's reasonable to assume that if Blu-ray is to replace DVD as a mainstream format, it'll need devices like this. Just because your hi-def discs can feed a full-blown home cinema, it shouldn't preclude more convenient use elsewhere. ●

→ Specifications

3D: NO But Sony has shown a prototype
Upscaling: YES 1080p
Multiregion: NO Region B BD/R2 DVD
HDMI: YES 1 x v1.2
Component: NO
Multichannel analogue: NO
Digital audio: NO
SACD/DVD-A: NO
Dolby TrueHD/DTS-HD decoding: YES/YES
Dolby TrueHD/DTS-HD bitstream: YES/YES
Profile 2.0: YES
Dimensions: 259 (w) x 204 (h) x 40.2 (d) mm
Weight: 1.53kg
Features: 10in TFT LCD panel with WSVGA 1024 x 600 resolution; Ethernet; USB; multimedia file support (Mpg, mpeg, .m2ts, mts, AVI, .mkv, .mp4, m4v, m2ts, mts, wmv, asf, AVCHD, MP3, M4a, WMA, WAV, JPEG); mini-jack input/output; five-hour battery; twin headphone outs

HCC VERDICT

Sony BDP-SX1
£300 Approx

Highs: Superb battery life; good USB media playback; WSVGA screen
Lows: Generally noisy; low-resolution video input; underpowered speaker system

Performance: 1 2 3 4 5

Design: 1 2 3 4 5

Features: 1 2 3 4 5

Overall: 1 2 3 4 5

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series



A360 September 2011



A360 September 2011



A25 August 2011

To the power cubed

Adam Rayner auditions a subwoofer that scales up nicely

Interior-friendly: The cabinet comes in a choice of seven finishes



→ Specifications

Drive Unit: 1 x 10in cone, long-throw design
Enclosure: Sealed. Down firing, on spikes to boundary-load to the floor
Frequency Response: 35Hz-120Hz +/-3dB
On board power: 215W RMS 'balanced drive' Class D amp
Dimensions: 352(w) x 382(h) x 305(d)mm
Weight: 11.4Kg
Connections: Single phono LFE input, plus stereo phono input and output and speaker level input

AV/CV

PRODUCT:

Affordable compact subwoofer available in seven finishes

POSITION:

Bottom of Wharfedale's three-strong range

PEERS:

Velodyne Impact 10; MJ Acoustics Pro 50 MkII; Tannoy TS10

Wharfedale is one of the UK speaker brands that has been in my awareness for longer than most as it makes stuff that is generally better VFM than just about anyone. And that keen value continues today with this particular line of subs, the PowerCube.

This woofer comes in 8in, 10in and 12in flavours and I reckon it'd be brilliant if it also came in a 15in or an 18in, as Wharfedale has packed some lovely stuff in here, but the price is kept low, despite recent increases in the cost of electronics from China.

The SPC-10 reviewed here costs a mere £300 and you get 215W of amplification (don't forget the 15) and a 10in driver in its box. It's boundary-loaded to the deck via a small space underneath, where the unit is held off the floor with spikes. These come with neat and tough plastic end-feet if you don't want to pierce a wooden floor. The cabinet, despite the series name, is roughly

trapezoidal and can be served up in any of seven different finishes.

On the top are a pair of flat knobs, for gain and shelving/crossover, inset within a panel, and they light up when used or when your hand kind of tickles the front of the enclosure. This means you can fumble in the dark and it lights up, only to dim itself after.

I hooked the SPC-10 up to my system and played a wide selection of tunes, spun *Prince Caspian* on BD and used it for a slice of *X Factor* (sorry) and other TV films in stereo.

Enigma variations

My findings were a bit puzzling at first. The Wharfedale specs are utterly righteous, quoting the +/-3dB frequencies. These are the limits of its frequency extension. At 35Hz it's -3dB, which is half as loud. It will make audible bass below this point, yet it is so weak by the time you get down to the really deep stuff that it might as well be irrelevant.

So, while a real, musical treat on multichannel recordings and soundtracks, the heavy subsonics in *Prince Caspian* just went 'burrrrrrp'. Any real texture in the deep fear-register was lost. I have no issue with the Wharfedale's scale, though, as it kept up bizarrely well otherwise – and despite my room being more suited to a pair of the SPC-12s. But I found the dearth of ultimate low-frequency extension a bit lacking for home cinema. The SPC-10's affordability, though, can't be ignored ●

HCC VERDICT

Wharfedale SPC-10 subwoofer
£300 Approx

Highs: Easy to set up; affordable; has some real ability; front panel illumination

Lows: Less muscular than some

Performance: 1 2 3 4 5

Design: 1 2 3 4 5

Features: 1 2 3 4 5

Overall: 1 2 3 4 5

DX-1 HCP

5.1 SYSTEM



Stylish, compact and eminently affordable, the new DX-1 HCP home cinema speaker system takes its design cues from the famous, multi-award winning Diamond 10.1 speakers. DX-1's sleek design packs a lot into a package which is beautifully discreet and easy to accommodate in the home.

DX-1 HCP consists of four satellite speakers standing just 19cm tall, plus an equally diminutive, but dynamic, centre speaker and a powerful, compact, active subwoofer, all built and finished to an exceptionally high standard and available in high-gloss white or black.

Delivering exhilarating detail and amazing sonic scale for such small speakers, the Wharfedale DX-1 HCP handles music and movie soundtracks with equal aplomb. Truly, this is one home cinema package that is small, yet perfectly formed.

WHAT HI-FI?
SOUND AND VISION



Wharfedale DX-1 HCP
What Hi-Fi? Sound and Vision, Awards 2011

Get tanked up

While it needs some refinement, AC Ryan's latest 'media tank' succeeded in meeting the stringent demands of **Martin Pipe**



Hunk:
The AC Ryan sports neat styling and tasty curves

The PlayOn2 HD is a smart and generally well-connected Linux-powered unit with comprehensive format support and provision for an internal HDD. Capacities of 2TB are supported, although some users have reported success with the new breed of 3TB drives. To transfer material to the HDD, you can connect the PlayOn 2's side-mounted, slave mode USB 3.0 port to a PC. It's then recognised as an external NTFS drive, and any material you want to play can be quickly transferred.

Alternatively, when connected to your network via Ethernet or a USB wi-fi dongle, you can transfer content via FTP (File Transfer Protocol). You'll need to configure FTP first and in my experience this can be tricky. But there are workarounds. The first takes the form of two host-mode USB 2.0 ports, to which storage devices can be connected. Secondly, there's an SD card slot, and the final option is networked multimedia playback. And in this regard, the PlayOn2 HD reveals its flexibility.

AV/CV

PRODUCT:
Networkable media player with provision for HDD

POSITION:
Top of the range

PEERS:
iXtreamer; Popcornhour A-110

Plug 'n' play

For a start, the player can source media from either uPnP/DLNA servers or SMB (files or folders shared on a network). After specifying music, video, photos or all files, the menu system lets you browse and then choose the device where the desired content is stored.

This can be the HDD if installed (the default), a USB device or a storage device located on the network, such as a PC, NAS or even some kinds of PVR. The latest firmware enables you to define shortcuts to specific devices.

Variety show

I was very impressed with the sheer variety of content types that the PlayOn2 HD can handle. DVD and Blu-ray ISO 'images' are supported, and playback is identical to that of the original discs complete with menus. Subtitles are recognised, too. It can automatically play all of the files within a folder in sequence and then start over.

There's a 'jukebox' mode, too, although it's far from user-friendly. If you have an HDD fitted, the unit is capable of acting as a uPnP-compatible NAS (getting it to join a specific workgroup requires some hackery). Do so and you can also copy files to it from a PC. Naturally, to take advantage of such functionality the PlayOn2 HD must be connected to a network. An added incentive is a smattering of on-line content. Available options include Shoutcast internet radio, YouTube/XL, Flickr, Facebook and Twitter, but BBC iPlayer isn't supported.

The PlayOn2 HD works well. Video looks great, especially in HD, with no lip-sync issues. Sound quality via the digital or analogue outputs is more than acceptable, too. I like it ●

→ Specifications

HDD: yes Takes a 3.5in SATA drive (up to 2TB)

HDMI: yes HDMI v1.3, up to 1080p
Component: yes up to 1080i

Digital audio: yes coaxial/optical and HDMI

AV connections: Phono sockets for composite video and stereo analogue audio

Upscaling: yes up to 1080p

Interfaces: USB x2 (host-mode); USB x1 (device-mode, for recognition as external HDD with PC); Ethernet; SD slot

Formats supported: DivX; XviD; MPEG-1/2 (including transport streams); MKV (x.264/H.264 – up to 1080p is supported); MP4; FLV; WMV; ISO (with menu access); video_ts (content only); WAV; MP2; MP3; WMA; DTS; AC3; M4A; AAC; FLAC; JPEG; GIF; BMP; PNG

Dimensions: 227(w) x 60(h) x 165(d)mm **Weight:** 1kg

Also featuring: 1080p/24 mode for Blu-ray rips; Shoutcast, Picasa, Flickr, YouTube, social networking; FTP mode; uPnP and SMB

HCC VERDICT

AC Ryan PlayOnHD 2

£130 Approx

Highs: Superb media player; useful extras; well-connected

Lows: Some configuration issues; no front-panel display for music-only use; little provision for SD displays

Performance: 1 2 3 4 5

Design: 1 2 3 4 5

Features: 1 2 3 4 5

Overall: 1 2 3 4 5

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HI-FI WORLD

"Real fidelity at an affordable price" - S/S PLATINUM M4

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MIDLANDS: Audio Affair (Birmingham), Sound Academy (Walsall),
Home Cinema and Beyond (Birmingham), Gear 7 (Solihull), SHROPSHIRE:
Creative Audio (Shrewsbury), NORTH WEST: Ambient AV (Northwich),
Cherry Electronics (Bolton), NORTH EAST: Harrogate Home Cinema
(Harrogate), Connectiv Technology LTD (Sheffield), Novatech (Leeds),
A1 Sound (Sheffield), Audio Elevation (Doncaster), NOTTS: John Kirk
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Jack of all trades

This single-chip DLP projector can be converted to 3D with off-board hardware. But it's trying to please too many different users, says **Martin Pipe**

The Viewsonic Pro8450 is a 720p single-chip DLP projector with a variety of applications. It can be used as a home cinema projector, but many of its features don't grace most of the PJs listed in our buyer's guide. First and foremost, the Pro8450 can be networked using Ethernet or an optional wi-fi dongle. This facility allows the projector to be remotely controlled via a web interface operating on a PC, smartphone or other device. System integrators will appreciate that Crestron's 'E-Control' standard is also catered for.

However, pwPresenter, an application bundled with the projector, is aimed primarily at corporate and educational markets. It enables the Pro8450 to be fed with the desktop (screen area) of a PC via the network. pwPresenter may be fine for presentations, where changes in screen content are minimal, but it's not intended for use with home cinema PCs displaying fast-moving fullscreen HD video.

Also embedded are a USB photo-reader (good for PC-free slideshows!), a presentation timer ('change PowerPoint slides NOW!') and a 2x10W audio system that doesn't pretend to meet home cinema specifications.

Available as an optional accessory is the VP3D1. This standard width unit converts 3D signals from various sources. Blu-ray sequential and Sky's side-by-side formats are both supported into the 3D DLP-Link protocol recognised by this projector, and a select band of other compatible units. 3D DLP-Link

AV/CV

PRODUCT: 720p PJ with some non-home cinema features; external 3D converter

POSITION: Roughly mid-way in Viewsonic's multi-function projector lineup

PEERS: InFocus SP8600; Optoma HD67N (with 3DXL adaptor); Vivite H1085

The Darkness: The handset is slab-like, small and lacks a backlight



is a 120Hz frame sequential system that operates at 720p. Between each frame is inserted a short 'burst' of sync that tells the active glasses when to 'flip' shutters. None are supplied with the VP3D1, although some retail 'bundling' is expected.

In other words, infrared line-of-sight isn't a problem; as long as the glasses are looking at the screen, then reliable 3D is assured.

Without the unit in position (it's connected between the sources and PJ) the Pro8450 is a standard 2D projector. When 2D content is displayed, the VP3D1's conversion process is bypassed. There's no insertion loss, and even when 3D is active the processing delay is too short to introduce severe lip-sync problems.

But back to the PJ itself. Superficially, **there's an impressive amount of connectivity on the rear panel. However, much of it is of little interest to pure home cinema hedz.** Amongst these are RS232, USB for firmware upgrades, two more USB ports for storage devices/wi-fi terminals and a direct PC connection (the projector's diminutive handset with laser pointer can be used as a mouse), the aforementioned Ethernet, VGA loopthrough for driving a 'local' monitor (enabling a presenter facing an audience to see what's being projected) and various audio inputs for the onboard sound system. One of these will accept a microphone.

Cue screen

However, the Pro8450 does boast a switchable 12V output for triggering

motorised screens and the like. With the exception of RGB Scart, all varieties of analogue AV are accepted here: VGA/D-Sub (a boon for advocates of home cinema PCs), component, composite and S-video. Only one HDMI port is provided, although the VP3D1 is equipped with a two-input HDMI switch.

The VP3D1 doesn't have any onscreen menus. All controls – source-selection, bypass, standby and side-by-side mode – are located on the front panel. In contrast, the Pro8450 is groaning with them. Filling much of the screen, these give you a fair degree of control over the displayed image, which can be inverted or flipped, thereby covering ceiling mounting,





Bundle of fun:

The VP3D1 (bottom) turns the Pro8450 into a 3D projector

front/rear projection and desktop use. Annoyingly, though, they're still present when you adjust parameters such as contrast or brightness. Other projectors take the menus off the screen, easing the lot of calibrators. All you can do here is increase the menu transparency so that the underlying video is more visible, or shunt them around the screen so they're slightly less obtrusive. Focusing and (1.5x) zoom are not motorised and cannot be adjusted from the handset.

Amongst other things the menus do cover are gamma; colour temperature; noise reduction; network configuration, (digital) keystone correction, photo playback

and 3D sync. When you're using the VP3D1, remember to turn the latter on, otherwise the resulting onscreen jumble will convince you there's a fault.

Scaling up

Aspect ratio, like input selection, can be selected via dedicated handset buttons. Natively, the Pro8450's 1,280 x 800 picture has a 16:10 aspect ratio that's the same as many notebook PCs. Thankfully, a 16:9 mode displays widescreen video in the correct aspect ratio. If you feed in 720p video, there's no unwanted scaling to spoil the picture.

This PJ is also compatible with 1080i/p video, but it's downscaled, of course. The VP3D1 will downscale >

→ Specifications

3D Ready: YES with optional processor
Full HD: YES 1080p/24
Component video: YES one input (HD-compatible)
HDMI: YES 1 x HDMI v1.3
PC input: YES 15-pin VGA analogue D-Sub
12V trigger: YES one
Resolution: 1,280 x 800
Brightness (claimed): 4500 ANSI Lumens
Contrast ratio (claimed): 3400:1
Dimensions: 333(w) x 110(h) x 263(d)mm **Weight:** 3.86kg
Features: Supports 3D DLP-Link protocol; 'eco' mode; single-chip (0.65in.) DLP with 16:10 native aspect ratio; manual x1.5 zoom and focus; fan noise 32dB (27dB in eco mode); 16:10/16:9/4:3 aspect ratios; adjustable feet



full HD 3D material to the necessary 720p mode as part of its job. A 4:3 mode will satisfy those with a love of old movies and anyone with Laserdisc or VHS player connected via the analogue inputs. That's it for aspect ratios, although an electronic zoom and simple picture 'freeze' have been thrown in for good measure.

One field in which the Pro8450 really stands out is brightness. There's plenty of it – even when a large image of over 4m is being projected (achievable with a projection distance of around 5m).

ViewSonic's own spec claims a stonking 4500Lumens output from its 280W lamp. But there's a downside to this. In addition to a significant degree of fan noise, black levels are rather poor.

I recommend switching to the 'eco' mode, which tames brightness to a level at which many home cinema PJs would still be proud. Even in this mode, which does improve blacks and quiets the fan, one disturbing artifact was still noticeable, at least, with my review sample.

Towards the bottom of the screen, I noted faint circular patches of light. With the letterboxed 16:9 image, these could be intrusive in a darkened room. Leakage in the (powerful) light path is undoubtedly the cause.

The Devil's in the detail

This may only be a 720p projector, but subjective detail is surprisingly good with pristine CGI-driven Blu-rays such as *Battle: Los Angeles*. Contrast range also proved more than acceptable, considering the modest 3,400:1 claim, although I've seen better from dedicated home cinema projectors at the same price point.

My main criticism of the Pro8450's performance is that

Net, set, go:

Rear panel ports include the business-minded Ethernet connection

the rainbow effect associated with single-chip DLP's colour wheel (two-speed, five-segment, in this projector) is rather noticeable on occasions.

There's also a prolonged flickering if the input changes in any way. This is caused by the colour wheel's need to re-synchronise.

With the VP3D1 in tow, I switched to 3D material. *Ice Age 3* yielded a modicum of depth, with a surprising freedom from crosstalk. Long-term viewing could be rather fatiguing, though. Furthermore, no brightness compensation for the light-attenuating property of the glasses has been incorporated; the 3D sync setting itself reduces brightness, too. Both factors contribute to a darker picture, but better blacks.

I encountered another problem during the review period. On one occasion, it failed to respond to the handset. Not even the unit's standby button would shut it down. Clearly the user interface had crashed, necessitating an unwelcome shut-down procedure – unplugging it.

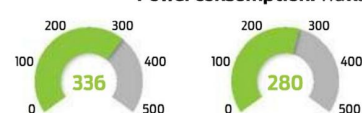
Does the business

ViewSonic is pushing the Pro8450 and VP3D1 combi as a serious 3D proposition for home movie/gaming fans – much like the Optoma HD67N/3DXL offering. Yet it suffers immensely from its price point; there are projectors around from both Epson and Optoma that provide integrated Full HD 3D for less outlay. As such, it's difficult for me to recommend it, despite the generally likeable picture quality.

On the other hand, and assuming that the anomalies I experienced can be attributed to a well-travelled review sample, the Pro8450 could be an ideal choice for the business user in need of a projector that can be smuggled home at weekends...

Tech Labs

Power consumption: Watts



White screen:

A high figure for a projector of this size and spec

Test footage:

Movie playback brings consumption down considerably

TV Contrast: Ratio



Colour temp: Kelvin



Picture:

Not a particularly high measurement, but neither is ViewSonic's own claim. Luminance measured at a very bright 74.5fl.

Presets:

We coaxed the Pro8450 to 6,500K via calibration. Otherwise, the Movie preset offers a respectable 6,800K
PC: 5,700K
Movie: 6,800K
White board 1: 6,000K
Black board: 5,700K
Green board: 5,600K



HCC VERDICT

Viewsonic Pro8450 and VP3D1
 £1,700 approx

Highs: Astonishingly bright picture; good detail for a 720p projector

Lows: Blacks and contrast fall short of competition; sample problems

Performance: 1 2 3 4 5

Design: 1 2 3 4 5

Features: 1 2 3 4 5

Overall: 1 2 3 4 5

Play it your way

Pioneer has developed a revolutionary new speaker system. This system features HVT technology to produce immersing sound in a full and unique 360° soundscape.



HTP-SLH500

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Pioneer

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Loewe's latest for the loft dweller

Loewe redefines the luxury TV category with its debut 3D-capable TV, leaving **John Archer** wondering why his pockets aren't deeper

As Forrest Gump so very nearly said, Loewe is like a box of chocolates; you never know what you're going to get.

Thanks to the German luxury brand's unique 'consumer choice' approach to design, it's impossible for a reviewer to predict for sure what colour TV is going to emerge from the box, with which speaker options, or design of stand.

So, in the case of the Loewe Individual range here, we don't know for sure what coloured side panels we might end up with. For Loewe's almost 'bespoke' range, you can choose the colour of the insets your particular model has, with the different options adhering to the TV's edges magnetically.

In fact, the 46in Individual Compose 3D I received was finished in high-gloss black with chrome inserts, and came with a matching black speaker bar that simply attaches to the TV's bottom edge. And the whole thing was then mounted onto a gorgeous, cross-style chrome floorstand. Loewe even designs full surround sound

speaker options to accompany its TVs, including a sumptuous, floorstanding, electrostatic 'flat' speaker set that I couldn't resist adding to my test package for a bit of fun, and which sounded every bit as good as it looked.

You pays your money...

Hopefully you've got the idea by now that Loewe currently offers comfortably the nearest thing the TV world has to bespoke design, short of going for a megabucks custom-built installation.

The catch with offering so much design flexibility, of course, is that Loewe kit isn't cheap. After all, every single part of the design 'story' has to be specially manufactured and distributed – a tough ask for a brand that hardly manufactures on the same scale as the Panasonics and Samsungs of this world.

The Individual 46in 3D by itself costs a cool £4,100, with the £555 stand and £295 speaker bar costing extra. But while this clearly limits the number of people who might be able to buy one, the fact of the matter is that for the niche market Loewe is targeting with its branding and design ethos, price isn't an issue.

Features and performance quality may pose an issue, though, however much it might be the Individual 46 3D's design that initially attracts a prospective buyer. So it's rather handy to find the set scoring well in both departments.

The Individual Compose 3D is Loewe's first TV to carry 3D playback. And this is of the active variety, so you have to factor in an additional £130 per pair of glasses, too.

Another key and unusual feature is the Individual 46 3D's built-in

digital recorder, complete with 500GB of space for recording from the integrated Freeview HD or satellite (not Freesat-'wrapped', though) tuners.

The full HD screen is driven by edge LED lighting, with image processing coming courtesy of the latest iteration of Loewe's Image+ engine. As usual, this targets improving colour, sharpness, motion reproduction and contrast.

Loewe was one of the first brands to ship a Smart TV, so it's no surprise to find the Individual 46 3D carrying built-in wi-fi, which provides access both to video, photo and music files stored on a DLNA PC and to Loewe's MediaNet online service. This is broadly similar in content terms to current Philips TVs, which isn't surprising given that Philips, Loewe and Sharp are now engaged in a content-sharing deal.

Highlights of MediaNet include Viewster, iConcerts, CineTrailer, Box Office 365, HiT Entertainment, Discovery Channel Videocast and Cartoon Network video platforms, the Picasa and MyAlbum.com photo sites, a weather site, and multiple utility, game and 'service' apps. There's also an exclusive Napster music app, and Loewe assures us that it's just waiting for a final sign-off from the Beeb's slow bureaucratic machine before it will also offer the BBC iPlayer.

Colour rich

In many ways the Individual 46 3D's pictures are very good. Starting with 2D, Loewe has a long tradition of producing stable, ultra colourful pictures, and this telly continues the trend. Colours with 2D are generally as believable as they are rich, too, >

Slab of silver:

The remote's non-standard layout takes time to learn, but at least it's attractively finished



AV/CV

PRODUCT: A luxuriously designed 46in LCD TV

POSITION: High up Loewe's range, just below the flagship Reference level

PEERS: Samsung UE46C9000; Philips 46PFL9705

Loewe's debut 3D model also
packs in plenty of Smart features



→ Specifications

3D: YES **Full HD:** YES 1080p/24
Tuner: YES Freeview HD and open satellite
Component video: YES one input (rear)
HDMI/DVI: YES three, v1.4
PC input: YES one D-Sub
Resolution: 1,920 x 1,080
Sound: 2 x 20W **Contrast ratio:** 5,000,000:1
Dimensions (off stand): 1030(w) x 630(h) x 55(d)mm
Weight: 27.5kg
Also featuring: Active 3D playback with transmitter built in; pseudo 400Hz processing; USB media playback; noise reduction system; DLNA streaming support; Media Net online service; built-in 500GB HDD video recorder



Elegance assured:

The optional soundbar just attaches at the base of the screen itself

(just as well given how little control over colours Loewe's rather tedious, over-complicated onscreen menu system gives you).

There's also impressive subtlety and range in the way colours are displayed, a fact that's underlined superbly by the screen's excellent hi-def fine detail response, which ensures that colour blends never look stripy or patchy.

This detail response also ensures that Blu-rays and other HD sources look crisp and textured, and this isn't diminished by LCD motion blur – not once the TV's warmed up, at any rate.

Moreover, the set is a decent contrast performer with deep blacks sitting right alongside bright whites and rich colours in a single frame. That said, the biggest problem is that dark scenes reveal noticeable backlight 'clouding', where some areas of what should be even blackness look lighter than others.

Reining in this problem requires nudging the screen's brightness

down to around its '8' setting, but at this point dark parts of the picture start to look crushed and devoid of shadow detail. In other words, it's not quite possible to get a perfect black level result.

One other point to stress is that you should not use Loewe's DNC (digital noise cancellation) system, for this routinely makes pictures look soft and blurred.

Turning to 3D, **the Individual 46 scores immediate Brownie points for not reducing brightness and colour saturations as much as many active 3D TVs.**

There's lots of detail on show with 3D Blu-rays, too, and Loewe's processing also handles Sky's side-by-side 3D broadcasts capably enough.

The sense of 3D depth isn't quite as pronounced as some, perhaps, but at least this means it isn't tiring.

The Individual 46 3D does suffer with one notable 3D flaw, though: crosstalk noise. This is quite severe if you try and watch stereoscopically before the set has fully warmed up; I'd recommend having it on for at least an hour before watching any 3D.

But even once the set has been up and running, it's common to see ghosting over background objects, especially during dark scenes. And as usual, whenever this happens, it reduces the image's sharpness and can prove distracting if you find yourself looking for it.

Ethereal crosstalk

To clarify, the crosstalk isn't particularly aggressive; it's more shadowy than solid and doesn't contain any colour. But there's no doubt that it diminishes the 3D watching experience.

Nothing diminishes the quality of this flatscreen's audio, though. If the TV seems expensive, then the speaker bar is value for money considering how rich, open, powerful and clean it sounds. There's even some bass around, for heaven's sake. Essentially it's like having a separate audio system without the usual clutter or expense.

The Individual Compose 46 3D's backlight inconsistency and 3D crosstalk issues mean I can't give the set a whole-hearted recommendation to die-hard AV enthusiasts. But if you've got deep pockets and are after an all-round TV that includes awesome audio and peerless integrated design alongside good overall picture quality, then this Loewe set is uniquely well qualified ●

→ Tech Labs

Power consumption: Watts



White screen:

A pleasing power consumption figure for a 46in LED TV

Test footage:

Little variation with movie footage – we measured an average figure of 87W

TV Contrast: Ratio



Colour temp: Kelvin



Picture:

Way off the hyperbolic claim, but a very good contrast reading, with a luminance of 29.8fL

Presets:

None of the three colour presets are particularly accurate – and lack of conventional adjustments makes calibration tricky
Normal: 8,700K
Soft: 8,800K
Intensive: 10,600K

Onscreen: Menu



Media Net:

Loewe's Smart TV service offers a decent array of content, including Napster – which no other brand currently offers



HCC VERDICT

Loewe Individual Compose 46 3D
£5,000 Approx

Highs: Near-bespoke design; very good 2D pictures overall; excellent built-in lossless video recorder

Lows: Crosstalk with 3D; some backlight inconsistency

Performance: 1 2 3 4 5

Design: 1 2 3 4 5

Features: 1 2 3 4 5

Overall: 1 2 3 4 5



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Dual-function fun

Panasonic's combination PVR and disc-spinner is slick and convenient, reckons **Steve May**, but a larger HDD would be welcome

You might think that a Blu-ray player with a Freeview HD recorder shoehorned into its case would suffer from clicks and thrums, or that co-habitation would add unflattering pounds.

But neither is true; Panasonic's home entertainment combi looks the part, being just as slim as other lightweight Panasonic Blu-ray decks, and behaves much like any other hard-drive recorder on the shelves.

The unit is well equipped. Rear connections include a single HDMI, digital optical and stereo phono outputs, Ethernet, USB and RF loopthrough. A front fascia flap hides an additional USB and SD card reader. There's also integrated wi-fi.

The DMR-PWT500 records to a 320GB hard drive, enough for around 80hrs of hi-def and 150hrs of SD.

This is meagre by current standards; Panasonic's key rivals offer 500GB of storage, which I'd regard as a minimum now for any hi-def PVR. But at least the thing is quiet.

Recording-wise, you can 'tape' programmes during live broadcasts or plan them from the EPG. The brand, unfortunately, continues to use the ROVI-sourced programme guide, also seen on its TVs, which is distinguished only by its awfulness.

The deck can timeshift two channels simultaneously and will let you start viewing recordings before they've finished.

Recording quality is excellent. While Freeview's lower bitrate channels inevitably underwhelm, HD content from the BBC, ITV and C4, are as good as original transmissions. Your recordings can be chaptered,

AV/CV

PRODUCT:

Combi 3D Blu-ray player with integrated Freeview HD PVR

POSITION:

Disc-spinning variant of the DMR-HW100 PVR

PEERS:

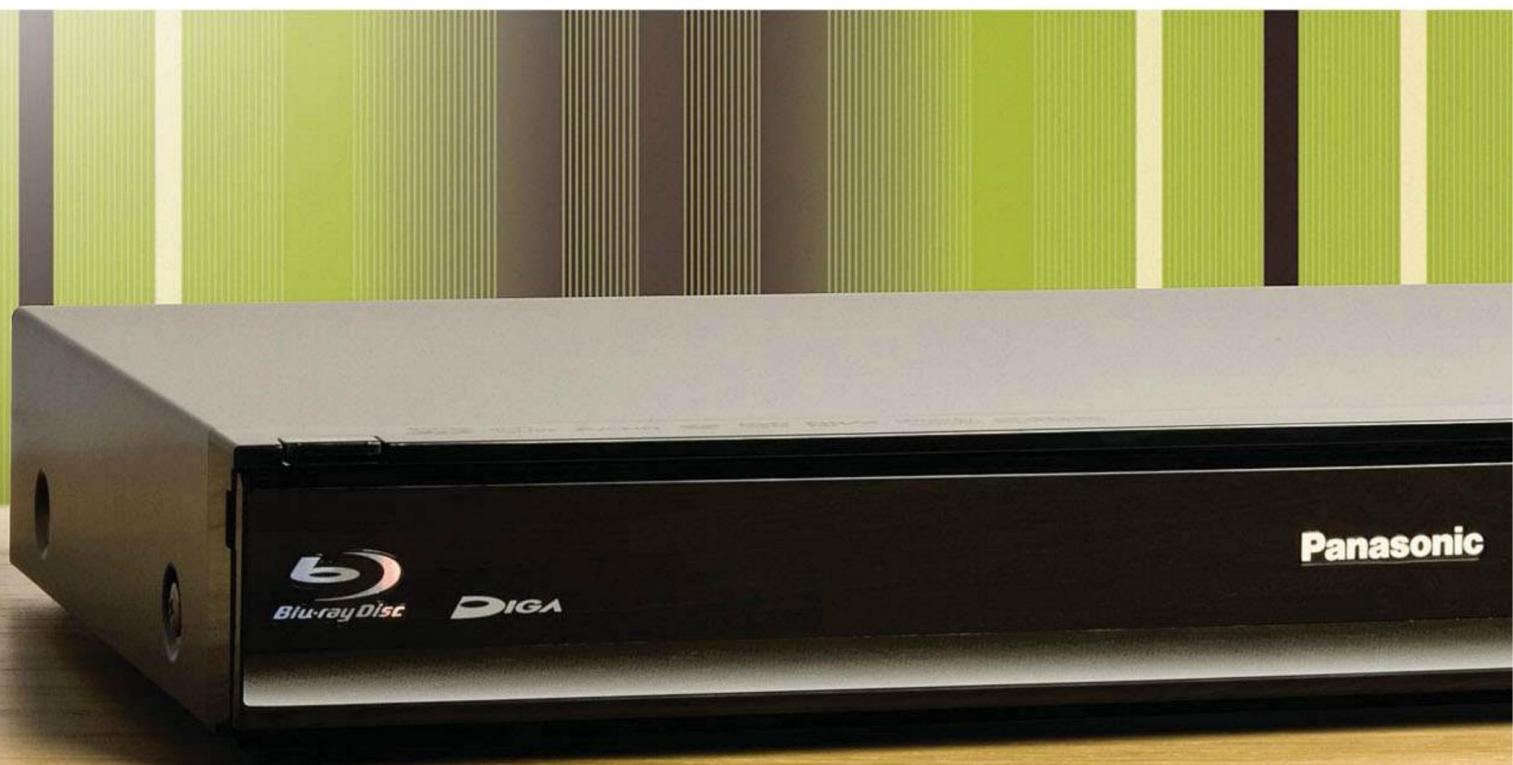
Samsung BD-D8500; Samsung BD-D6500

divided or partially deleted. You can also change the thumbnails if you don't like those auto-generated.

Euro bias

Naturally, there's net connectivity on hand in the form of the brand's VIERA Cast content portal. But it's not particularly rewarding if you're a Brit. There's currently no BBC iPlayer, instead you get YouTube, Daily Motion and a host of European services, which feel odd when accessed via a UK Freeview TV box.

As a Blu-ray player, the DMR-PWT500 does the business. It's 3D disc-compatible and benefits from the image processing smarts that permeate Panasonic's player line from the top down. However, it's probably worth stressing that this is not a recorder; you can't burn any



timeshifted telly onto blank BDs.

Disc loading speeds are in line with its peers. Java-heavy discs can take around a minute to start-up, while lightweight authoring jobs hit their menus in half that time.

Hidden talents:

Viera Cast access is relegated to a tiny button on this remote



Superior pictures

Both flat and three-dimensional Blu-rays look predictably spectacular. Images are crisp and noise free. When playing a 3D platter, a number of other picture embellishments become available. You can alter the sense of depth in the image as well as obscure swathes of the screen with the brand's unashamedly odd Picture Frame function. There's also the option to depth convert regular discs into faux 3D.

You'll have no problems integrating the DMR-PWT500 into a home cinema system.

The deck is compatible with all the requisite audio formats, including Dolby TrueHD, DTS HD MA, MPEG, HE-AAC and LPCM. But you'll need an HDMI v1.4 AV receiver if you want to route 3D video to your display and decode lossless multichannel audio.

But the machine is not just about discs and timeshifting. It will also act as a media server to other DLNA media players, just by turning on the Server function from the main menu. Sadly, I had mixed results with this

feature. Some networked DLNA media players could see but not read the Panasonic's contents, while others could stream SD recordings but not HD ones. So network integration is not quite as seamless as you might hope.

Multimedia playback is similarly shonky. The USB reader will unspool both AVIs and MKVs, but across a network the deck only seems interested in AVCHD.

There is provision for some file management. You can copy content from USB (be it MP3s, still images, MPEG video or AVCHD) to the hard drive. This jukeboxing works particularly well if you want to park your MPO snaps on a device designed to display/slideshow them. While the deck will move MP3s to the HDD, it won't rip CDs.

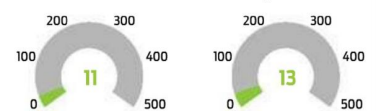
Multi-tasking isn't a strong point, either. You can't access USB drives or scour your network for entertainment when the PVR section is recording.

Space saving

While this Panasonic isn't quite the finished article (its media streaming definitely needs some work) it's still a good bet if you're trying to save space under your TV or in an equipment rack. Both its PVR recording talents and Blu-ray disc playback can be considered above average and the overall convenience factor is high

Tech Labs

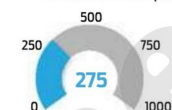
Power consumption: Watts



Idling: About normal. Standby is under 1W, unless you choose the 'power save off' feature for faster boot times – it's then 3W

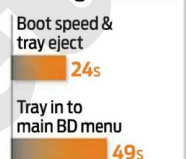
Powered: A minimal increase when playing a disc

Audio Jitter: ps



Sound: This audio jitter figure is similar to the brand's dedicated BD players

Loading: Boot/Java



Disc loading & Java: Without the power save feature activated, waking this combi deck is a drawn out affair

Onscreen: HDD



Window watch: Browsing recordings brings up a PIP window – in case you've forgotten what EastEnders looks like

Specifications

3D: YES Upscaling: YES to 1080p
Multiregion: NO Region B BD/R2 DVD
SACD/DVD-A: NO/NO
Dolby True HD/DTS HD decoding: YES/YES Profile 2.0: YES
HDD: YES 320GB Tuners: YES Freeview HD x 2
HDMI: YES v1.4a
Digital audio: YES optical digital audio
Component: NO
Dimensions: 430 (w) x 59 (h) x 249 (d)mm Weight: 2.5kg
Features: Viera Cast net portal; DLNA media server and streamer; USB media player; SD card reader (file support AVI, MKV, DivX, MP3, AVCHD); 8-day EPG; Live Pause; media transfer



The slim silhouette belies the fact that the DMR-PWT500 performs two functions



HCC VERDICT

Panasonic DMR-PWT500
£400 Approx

Highs: Compact; excellent Blu-ray pictures, good Freeview HD recording
Lows: Limited file support across a LAN; limited UK portal content; daft 3D picture processing; small HDD

Performance: 1 2 3 4 5

Design: 1 2 3 4 5

Features: 1 2 3 4 5

Overall: 1 2 3 4 5

Luxury for less

Adrian Justins hunkers down in the suburbs with Onkyo's latest mid-range networkable 7.1-channel receiver that punches far beyond its weight

Onkyo's TX-NR709 ups the audiophile ante of the much-loved TX-NR609, and has a back panel busier than Oxford Street at Christmas. In come binding posts for all speaker terminals, bi-amping capability, 7.1 phono inputs and 7.2 pre-outs, which is strictly speaking 7. (1 x 2). You can hook up a grand total of 11 speakers, with the option to enjoy 7.1 sound at any one time through the usual 5.1 configuration, plus either surround back, front high or front wide expansion.

There's also an extra coaxial input, a dedicated phono input and an extra

pair of 3D-ready HDMI sockets, including a second output, which enables the simultaneous connection of two displays.

An Ethernet socket allows DLNA networking and internet radio, the latter including dedicated Last.fm and Spotify portals. Sadly absent from this connectivity convention are built-in wi-fi and support for Apple's AirPlay. The latter is popping up on receivers all over the place, so the TX-NR709 looks a bit old-fashioned here.

Onkyo's amps no longer have the catwalk looks that gave them a

distinctive edge in the style stakes, but the TX-NR709 is pleasant enough in appearance albeit with minimalistic black buttons and controls that are impossible to distinguish in low light. What is nice is the simple glow of the volume knob and the clarity of the 28-character dual-line display. Then again, a good amp should be heard and not seen and it's jolly satisfying to switch over to Pure Audio mode, which kills the lights and switches off the video circuitry (HDMI-exception).

Setting up the AVR is best done by hooking up a screen using HDMI and

AV/CV

PRODUCT:
3D-capable
THX Select2
Plus receiver

POSITION:
Upper end of
Onkyo's receiver
range

PEERS:
Denon AVR-2311;
Yamaha
RX-V1067



Simple black buttons contribute to the appealing styling of this AVR



plugging in the supplied Audyssey mic. You then choose either Quick Start for a sole listening position calibration or MultEQ XT, which uses eight positions and calculates all the normal parameters but takes 20 minutes rather than two. Using MultEQ XT resulted in severely askew distances for a couple of speakers in my listening room, possibly caused by ambient noise or interference. The QuickStart option, was bang on.

Sweet install

Manual adjustments are easy to make thanks to neat menus and a sensible remote control. Experienced enthusiasts will whizz around the system at leisure, while newcomers to the home cinema scene should find setting up no more trying than installing a Blu-ray deck or TV screen.

The only thing that feels a touch antediluvian is the online radio experience. Vtuner, for example, provides access to an incredibly diverse array of global online radio stations, but drilling down into its complex folder structure is tedious.

Strictly speaking, the NX709 is a mid-range model, but its

Remote:
Well laid out and colour coded for ease of use



performance is akin to a higher-end one, balancing excitement and strength with fine control. With *Master and Commander's* Dolby Digital transmission on Sky HD, the distinct clearness of a violin playing as the ship ploughs along is exquisite, while waves crashing on deck have you reaching for your waterproofs. On *Wall-E's* DTS-HD MA soundtrack, the clanking and clanging during the tiny robot's courting of Eve resonates masterfully. The nuances of the robots' voices as they say their names is often lost with amps that are less capable of subtlety.

Ascendant star

While the TX-NR709 can pick out the finest detail, it lacks a touch of warmth, particularly with vocals and music. Nonetheless, the incredible clarity of Hilary Hahn's SACD of Vaughn-William's *The Lark Ascending* has all the sublime emotion that a warmer amplifier might also deliver.

In short, this is a feature-packed AVR from that will delight home cinema enthusiasts with its price and performance. And that's starting to sound like Onkyo's catchphrase.

Tech Labs

Power consumption: Watts



Idling: Not as power hungry as some AVRs when idling

Powered: This average figure is what you can expect consumption to be with movie playback at a sensible listening level

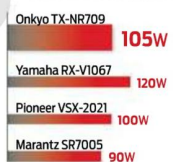
Power ratings: Watts (8Ω, 0.5% THD)



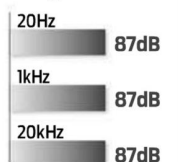
2-channel 8Ω: This measurement into 8Ω roughly correlates with Onkyo's own 6Ω specification

5-channel 8Ω: Despite the expected drop-off in multichannel, this is still a healthy figure

Untainted: Watts



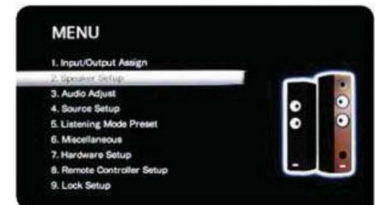
Signal/noise: dB



Fidelity firewall: Power at 0.02%THD into 8Ω

S/N tests: Solid across all the frequencies

Onscreen: Menu



Graphic assistance: Onkyo's setup menus are more glamorous than some of the competition

Specifications

Dolby Digital TrueHD: YES
DTS-HD Master Audio: YES
THX: YES THX Select2 Plus
Multichannel audio: YES 7 x 170W
Multichannel input: YES 7.1
Multiroom: YES Powered Zone 2 and Zone 2 line-out (audio)
AV inputs: YES 5 x composite video, 4 x S-video, 2 x optical audio, 3 x coaxial
HDMI input/output: YES 8-in, 2-out v1.4
Video upscaling: YES to 3,840 x 2,160
Component input/output: YES 2-in, 1-out
Dimensions: 435(w) x 174(h) x 379(d)mm **Weight:** 12.2kg
Features: DeepColor; x.v.Color; three-stage inverted Darlington Circuitry; front USB for iPod/iPhone playback; Audyssey MultEQ XT; Audyssey DSX; Dolby Pro-logic IIz; DLNA certified; internet radio (vTuner, Last.fm, Napster, Spotify); Bi-Amping capability; FM/AM radio; Ethernet; universal port; 12V trigger



HCC VERDICT

Onkyo TX-NR709
£800 Approx

Highs: Networking including online audio access; multichannel inputs; ease of use; dynamic sound
Lows: Online interface lacks finesse; lacks Apple AirPlay and built-in wi-fi

Performance: 1 2 3 4 5

Design: 1 2 3 4 5

Features: 1 2 3 4 5

Overall: 1 2 3 4 5

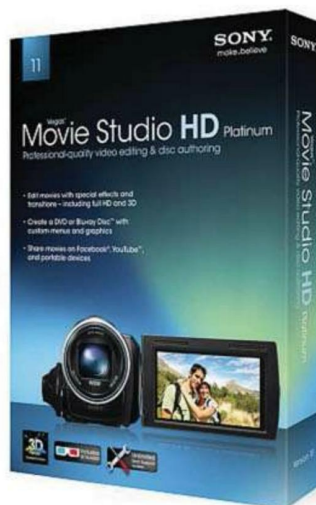
Video post-production wizard

Try out the 'DIY' approach to movie making, says **Martin Pipe**

A bewildering array of devices can capture video nowadays, but the editing process is arguably just as much fun. The computer-based edit suite offers considerably more in the way of facilities than the cutting room of yesteryear. This is a cut-down version of a professional package and it's not a toy!

Pros

- The inclusion of anaglyph glasses hints that Sony's latest supports 3D, as well as HD up to 1080p/24. As with other 'non-linear' video-editing packages, your clips are added to a horizontal 'timeline', upon which reside multiple video and audio 'tracks'. These contain your clips, soundtrack and other 'elements' – such as music (from CDs or MP3s), still-images and voiceovers. Clips can be trimmed, and pieced together in the most appropriate order.
- Your 'final cut' can be exported to



Edit sweet: loads of pro features make DIY movies easy and impressive

YouTube, or saved as a file. The 'target' can be a portable media player, and formats recognised by other devices (HDV/DV-AVI, MPEG, etc) are covered too. A separate Blu-ray/DVD authoring application is provided. Another program will capture footage from tape-based DV or HDV camcorders; with memory card-based devices, it's easy to copy your footage to a folder on your PC and import it from there.

- Professional-grade features are offered so that, unlike some other packages, you can add more tracks as and when they're needed. Your soundtrack can be stereo or 5.1, and full control over your audio mix is provided. VST

effects are supported, as are dual displays. Clips can be joined by a wide choice of transitions or treated with video-effects filters. A title, with animation, is also provided. Keyframing gives you complete control over the edit. Thanks to all of this, edited movies can look excellent.

Cons

- Not very easy to use. If you've spent time with lesser packages, the learning curve is steep.
- The video stabilisation feature, intended to compensate for handheld 'shudder', is not free of artifacts.

HCC VERDICT

Sony Vegas Movie Studio Platinum 11.0
£60 Approx

Overall: 1 2 3 4 5

CELLO C42T7IDVB-3D → £599 Approx → www.celloelectronics.com/

3D TV is an unstrung hero

Steve May is confused by budget-brand Cello's first 3D TV

Unless you're a purveyor of shopping catalogues or a regular at MarksandSpencer.com, you'll not be overly familiar with the Cello brand. This UK-based operation specialises in budget TVs with a high-tech twist. It was the first to integrate BBC iPlayer with its iViewer telly and now it's pushing 3D. But has the brand got its priorities in a muddle? This Passive 3D telly marries some cutting-edge tech with old-school

CCFL backlighting and a standard-def DVB tuner. And at £600, it still doesn't seem budget enough.

Pros

- The Cello's passive 3D IPS panel is capable of entertaining results from 3D Blu-ray – although standard caveats apply. The Passive 3D technique reduces the vertical resolution of any incoming 3D signal. But kids watching *Gnomeo and Juliet* are unlikely to complain.
- The integrated USB media reader proved compatible with a range of file formats, including AVI, MOV, MP4 and MKV-wrapped video files. Audio compatibility covers MP3, WMA, WAV and AAC. However, there's no album art support.

- Attach a USB external drive, or large USB stick and you can also record TV from the tuner. Recordings are DRM-free in .ts format, with a resolution of 544 x 576. They can be moved to, and played by, other devices.
- Pairs of inexpensive 3D polarising spectacles are included in the box.

Cons

- The CCFL backlight makes it quite a chunky TV. Stretching back 107mm, it certainly doesn't live up to its carton billing of 'Super slim'.
- While the TV can deliver a decent hi-def image, pictures from the SD tuner look rough.

HCC VERDICT

Cello C42T7IDVB-3D
£600 Approx

Overall: 1 2 3 4 5



In Brief

Driver: San Francisco (Xbox 360)
Ubisoft



£50 Approx

Driver is back – bigger, better and madder than ever! Taking its cues from *Life on Mars*, the game has you trapped in a coma, dreaming of police chases, your spirit hopping from car to car. Add stunning graphics, cinematic audio and sublime handling.

1 2 3 4 5

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Strike a light, it's a player!

This new pocket-sized media player knows no fear, says **Steve May**

There's little more infuriating than finding that your new TV/Blu-ray deck isn't quite the media player it purported to be. It may be happy with MP3s and AVIs, but that's no help if you want to play your FLAC rip of Impeckable or work through gigabytes of downloaded HD stuff.

But there is a solution, in the form of Crystal Acoustics' pocket-rocket Media Matchbox. It's just 16mm thick, yet it contains an enormously powerful sliver of silicon in the shape of the Realtek 1055. This chipset supports nigh on every file format and derivation thereof. There may be some incompatibilities out there, but I haven't come across any yet.

Pros

- During my audition, I checked off such audio formats as MP3, AAC, APE, FLAC, Ogg, WAV and WMA. Compatible video extensions include AVI, WMV, MPEG, FLV, TS, MKV and

XVID. It will even play DVD and Blu-ray ISOs and, yes, it does support DTS-HD Master Audio and Dolby TrueHD.

- The user interface is slick and there's a screensaver. Music files play back with album art, and all metadata is read correctly.

- There is provision to adjust video parameters for brightness, contrast, saturation and hue, but high-resolution files look tremendous straight from the box; the player does nothing to diminish clarity or colour gradation.

- The media Matchbox has indefatigable audio visual file support. Upgrade your TV with this box and a world of files and formats will suddenly become your oyster.



Good match:
Supports a multitude of media files

- The player includes comprehensive subtitle support for video, with adjustable colour, font and positioning tools.
- Runs cool and silent; there's no need for an onboard fan.

Cons

- The unit lacks network functionality. Playback files can only be loaded through USB or an SD/SDHC card reader.
- The Realtek 1055 chip powering the Media Matchbox doesn't support networking, so you'll not be able to put it on your LAN. Consequently, there's no IPTV services on tap either.

HCC VERDICT

Crystal Acoustics Media Matchbox
£55 Approx

Overall: 1 2 3 4 5

HD JUICE BOX → £400 Approx → www.justhdmico.uk

HD video over powerline

Try a new way to route video around the home, says **Steve May**

The HD Juice Box is an HDMI sender, but unlike rivals, it doesn't send video over the ether at all. Instead it routes moving pictures via your ring main.

£400 gets you a transmitter and receiver. Multiple kit can be connected to the transmitter: the back panel offers three HDMI inputs and one pass-through output, plus component and stereo inputs, phono AV, S-video and Ethernet. The receiver is smaller and has an HDMI output, alongside component and phono AV.

The two units pair over your power supply, enabling you to stream.

Pros

- Both SD and HD video can be transmitted. You can even use

the system as a conventional powerline device to extend your network. While it is possible to add extra standalone receivers, there is a caveat: the more video you try to network, the more bandwidth you'll lose. The makers say that a one transmitter/two receiver configuration

should work for all.

- Versatility – you can add individual receivers at around £200 a pop.
- SD and hi-def picture quality is stable and uncompromised.

Cons

- I ran into problems trying to distribute 1080p and 1080/24p from Blu-ray, incurring 'unsupported format' warnings. The system claims to support 1080p.

- Multichannel audio does not survive powerline delivery.

Routed audio arrives as PCM stereo only – and the quality is as harsh as Jodie Marsh.



HCC VERDICT

HD Juice Box
£400 Approx

Overall: 1 2 3 4 5

In Brief

F1 2011
(Xbox 360)
Codemasters
£50 Approx



While the bulk of the game is the same as F1 2010, in this year's update handling has been refined slightly, and the new rules, race technologies and tracks, plus the addition of split-screen multiplayer, add some fresh challenges. This is a refinement of the greatest F1 game ever

1 2 3 4 5

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Radiating power

Danny Philips is impressed by the punch delivered by these slim Jims, and he can't wait to get them up on his wall alongside his flatpanel TV

Finding the right speaker system to go with a wall-mounted TV can be tricky, but this one is built to deliver the same sort of dynamism and punch as full-size speakers, according to the makers.

I was sent a trio of XTR-50s on their own, but because they cross over quite high in the frequency range (around 100Hz) its UK distributor Pulse always recommends pairing them with one of its SuperCube subs – so I teamed it up with an Acoustic Energy Neo Sub instead.

The XTR-50s are recommended for TVs between 46 and 55in, but there's a larger model, XTR-60, for 55-60in sets and XTR-40s for 40 to 42in sets. They can be used either vertically or horizontally as front or centre channels.

Build quality is sensational. The enclosures are crafted from what the company calls 'aircraft grade' extruded aluminium, making them some of the most rigid and robust flatpanel speakers I've seen. Their structural integrity is further improved internally by stiffening ribs and channels, which help to eliminate resonance.

Up close the gloss black finish oozes class and if you don't want to wall-mount them, each speaker comes with a smoked tempered glass table stand. Connecting cables is quite fiddly, though; you need to plug a small, two-pin attachment into the back with screws to hold the wires, but it doesn't feel secure.

The secret of Mythos' svelte dimensions is its XTDD drivers, which have been squeezed down by eliminating wasted space and increasing the surface area. You'll find two of these in each speaker, as well as four 3.5in bass radiators for added low-end oomph and a 1in aluminium dome tweeter.

Fire up a film and the Mythos system is a class act, delivering a sound that goes far beyond what you



Wallflower: The Mythos speaker is designed to match your flatpanel TV

might expect from such slim speakers. Action scenes are punchy, while effects are sprayed into the room with considerable scope.

Coaxing details

The Mythos easily teases out subtle background ambience and reproduces high frequencies with sparkling clarity, but when pushed to go loud I could detect hints of brightness in some of those high frequency sounds.

I also listened to the XTR-50s in isolation to test their natural bass response and found the sound lacking in depth and balance without an added subwoofer, which is no surprise given the shallowness of the enclosures.

All of which makes KEF's T205 flatpanel system a better bet sonically, but Mythos is still a classy performer and deserves plaudits for its amazing build quality and miraculously slim dimensions ●

AV/CV

PRODUCT: Wall-mountable flatpanel speaker system

POSITION: Designed for 46-55in TVs, sits between larger XTR-60 and smaller XTR-40

PEERS: KEF T205; Monitor Audio Soundframe; Artcoustic Diablo

→ Specifications

Drive units: 2 x 3.5mm XTDD anodized aluminium dome mid/bass drivers, pressure coupled to 4 x 3.5in bass radiators; 1 x 1in pure aluminium dome tweeter
Enclosure: Extruded aluminium
Frequency response: 92Hz-30kHz
Sensitivity: 92dB
Power handling: 100W
Dimensions: 152(w) x 686(h) x 380(d)mm
Weight: 2.3kg

HCC VERDICT

Mythos XTR-50
£2,400 Approx

Highs: Aircraft-grade build quality; sharp, potent sound

Lows: Some HF brightness; fiddly cable terminals

Performance: 1 2 3 4 5

Design: 1 2 3 4 5

Features: 1 2 3 4 5

Overall: 1 2 3 4 5

AVaficionado

For those in the know...



High definition universal Blu-ray Disc™ players offering pristine quality video and audio for home entertainment

Modified Oppo BDP-93EU and BDP-95EU units are available from AV Aficionado in multi-region (DVD) and multi-zone/multi-region (Blu-ray/DVD) options. All products are supplied with a two-year warranty.

Features include:

- Blu-ray 3D
- SACD and DVD-Audio
- Dual HDMI outputs
- eSATA and dual USB 2.0 ports with NTFS support
- Network streaming and Wireless-N

Designed for the Audiophile, the Oppo BDP-95EU also features:

- Dual ES9018 SABRE 32-bit reference DAC (7.1 and dedicated stereo)
- Balanced stereo XLR
- Toroidal transformer



For further details and prices contact AV Aficionado:
0845 370 0054 | info@avaficionado.co.uk
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Black Rhodium

Ninja DCT++

The cable that shows you **EXACTLY** how hard the bass drum is being struck



"Stunningly fast, incisive and transparent.... and boasts a massively articulated bass performance with firecracker dynamics"

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THE TOP 20



“..the majority of home cinema systems selected and installed on a DIY basis (that is without professional input) are performing at way below their optimum level.”

Choosing a home cinema system is a potential minefield that must be negotiated with great care or safely avoided by letting experts guide you. If you want to end up with a system that, as a minimum, meets your expectations in terms of picture and sound quality, reading magazine product reviews and choosing the recommendations, five-star favourites or best buys can only ever be part of the answer at best. Looking for the cheapest price and having a system delivered to your door, even with a ‘knowledgeable’ friend to help set it up, is a well-trodden path to disappointment.

There is a bewildering choice of components on the market today and also different ways in which components can be installed and connected together. Which sort of visual system do you go for? Projector and screen, or plasma, LCD or LED TV? 3D or non-3D? Full 1080p capability is now the only sensible choice but the appropriate source components, such as a Blu-ray player, need to be part of the equation. The sound performance of a system is also hugely important, even more so if you will be listening to music, or music DVD's, through

the same system. If so, you need an amp that approaches the performance of a decent 2-channel hi-fi amp, which is not that easy to find. Having an amp with the right inputs for the best connectivity is essential but you will also need to decide on a 5.1 or 7.1 speaker system, passive or active sub and, crucially, where they will be sited for the best results. In short, it's complicated and very fertile ground for getting it wrong.

ACHIEVING POTENTIAL

To select a system, you could choose a collection of ‘Best Buy’ components in the hope that they will be a great combination. Maybe, but probably not. You could buy a pre-packaged all-in-one system from one manufacturer. This is almost certainly not the best route either as you will miss out on enormous potential. From informal surveys conducted, it appears highly likely that **the majority of home cinema systems selected and installed on a DIY basis (that is without professional input) are performing at way below their optimum level.** To compound matters, most are also ill-matched to the room in which they are installed and are, in reality, the wrong system. Without considerable knowledge or experience, high quality home cinema is not a suitable DIY activity.

Our aim must be to buy a home cinema system that will provide an excellent picture

quality plus an audio delivery that will match, or even better, the commercial cinema experience. It must be exciting, reliable and deliver true value for money.

WHAT AND WHERE TO BUY

To ensure a home cinema system is right for you, where do you start? Here's an important tip ...**don't** start with **WHAT**, start with **WHERE**. There's only one way to give yourself the best chance of getting it right first time, and that's through a specialist AV dealer. It's possible you have preconceived ideas that put you off visiting one. Although you would welcome the advice and guidance, you don't know the technical jargon. You don't want to be talked down to. Your friend has said they only sell expensive gear and they're not interested if you don't have a big budget. They're expensive. These are just myths.

Most specialist AV dealers are running their business because, above all, home cinema is their hobby. They spend a large portion of their time comparing systems to get the best possible results. They know the component combinations which don't gel together and, conversely, they know the combinations which give the best performance within a given price range. Very importantly, they know how to get a system working to its optimum. But they all also know the system must suit **you**.

GUIDE

TO BUYING HOME CINEMA

LISTED BELOW ARE 20 OF THE BEST AV SHOPS IN THE COUNTRY.

They have been selected because they are known to do an excellent job in guiding customers towards home cinema systems that will provide years of superlative performance and total satisfaction.

BUYING OR BEING SOLD TO?

There are dealers around, web based or otherwise, who will sell you anything you are willing to pay for. They may be a bit cheaper but that's all they offer. Now there's a carefully selected group of long-established specialist dealers who are totally committed to putting the customer first. Their idea of 'selling' is to discuss your requirements, offer their advice, give you the best options, then play the systems for you and allow you to be the judge. You'll probably be surprised and, almost certainly, relieved to discover how easy it is to see and hear the differences between components and between systems. You'll be able to make a clear and informed decision about what to buy.

The story doesn't end there. These shops won't abandon you once you've put your hand in your pocket. They won't leave you to set up the system you've selected as best you can. They'll install it in your home, make sure it performs to its best, and ensure you're entirely happy with the way it works. Why? Because a high proportion of these dealers' custom comes through people who have bought from them before, either directly or by recommendation. It's vital to them to get it right for you.

GETTING THE BEST DEAL

Unless you've got money to burn, you'll be living with your new system for years. Most of these dealers offer much longer equipment guarantees than provided by the manufacturer, a very worthwhile benefit, but it also makes it in the dealer's interest to ensure high build quality and reliability. Maybe you could save a few pounds by buying piecemeal but you'll lose out on the overall package. As far as the dealers are concerned, they believe that taking care of their customers properly is a far better way of doing business than just handing over boxes.

OUR TOP 20 UK SPECIALIST AV DEALERS

SOUTH

Chelmsford RAYLEIGH HI-FI SOUND & VISION

216 Moulsham Street. 01245 265245
www.rayleighhifi.com

Colchester RAYLEIGH HI-FI SOUND & VISION

33 Sir Isaac's Walk. 01206 577682
www.rayleighhifi.com

Kingston-upon-Thames INFIDELITY

9 High Street, Hampton Wick.
020 8943 3530
www.infidelity.co.uk

Maidenhead AUDIO VENUE

36 Queen Street. 01628 633995
www.audiovenue.com

Rayleigh, Essex RAYLEIGH HI-FI SOUND & VISION

44a High Street. 01268 779762
Custom Install Dept.
01268 776932
www.rayleighhifi.com

Southend-on-Sea RAYLEIGH HI-FI SOUND & VISION

132/4 London Road. 01702 435255
www.rayleighhifi.com

Tunbridge Wells KENT HOME CINEMA

69 London Road, Southborough.
01892 535007
www.kenthomecinema.co.uk

LONDON

Ealing AUDIO VENUE

27 Bond Street. 020 8567 8703
www.audiovenue.com

N1 GRAHAMS HI-FI

190a New North Road. 020 7226 5500
www.grahams.co.uk

SW11 ORANGES & LEMONS

61-63 Webbs Road, Battersea.
020 7924 2040
www.oandlhifi.co.uk

SW20 O'BRIEN HI-FI

60 Durham Road.
020 8946 1528
www.obrienhifi.com

MIDLANDS

Coventry FRANK HARVEY HI-FI EXCELLENCE

163 Spon Street. 024 7652 5200
www.frankharvey.co.uk

Nottingham CASTLE SOUND & VISION

48/50 Maid Marian Way. 0115 9584404
www.castlesoundvision.com

Solihull MUSIC MATTERS

93-95 Hobs Moat Road. 0121 742 0254
www.musicmatters.co.uk

NORTH

Chester ACOUSTICA

17 Hoole Road. 01244 344227
www.acoustica.co.uk

York SOUND ORGANISATION

2 Gillygate. 01904 627108
www.soundorg.co.uk



The majority of the above dealers are members of one or both of the major trade organisations, BADA or CEDIA.

STAR QUALITIES

VALUE FOR MONEY ★ ★ ★ ★ ★
SERVICE ★ ★ ★ ★ ★
FACILITIES ★ ★ ★ ★ ★
VERDICT ★ ★ ★ ★ ★



AV gifts galore!

Looking for a seasonal present for your home cinema system or for yourself? Check out the *HCC* team's guide to all things fun and festive



CYBORG GAMING LIGHTS

Approx £99

If you're bored with PC gaming, add light to the experience with the Cyborg from Mad Catz. The cool-running LED lights can be triggered by embedded codes in hundreds of games titles, directly from digital music tracks or from routines you write yourself with the supplied software. With 16 million colour combinations and the ability to chain multiple units via a USB hub, they're a psychedelic experience waiting to happen. <http://store.gameshark.net>



JUAL JF018

Approx £160

Doesn't your gear deserve a decent home? Try Jual's JF018, a modern-styled equipment cabinet finished in glossy piano black. It features two internal shelves of toughened safety glass, and a door with gas strut supports and concealed handles. Infrared remotes will operate through the door's glass panels, and the top space will support TVs of up to 50in screen size and 80kg weight. www.jualfurnishings.co.uk

ANGLE & CURVE HEADPHONES

Approx £60

Make sure you're on trend with these lovely 'phones. Created by Covent Garden-based designers, their sleek lines and stylish retro-look exterior hide twin 40mm drivers designed for deep, rich bass tone without sacrificing mid-range or treble highlights. There are five distinct finishes available, each featuring a soft adjustable headband, cushioned earcups and a 3.5mm jack connector. www.angleandcurve.com



SANDISK EYE-FI SD WI-FI CARD

Approx £40

Sandisk and Eye-Fi team up for this memory card with built-in 802.11 wi-fi. Stick it in your digital camera, configure your network or PC with the relevant folder information, and every shot you shoot will fly magically into your computer or to social networking sites. The card comes in 4GB and 8GB capacities. www.sandisk.co.uk





DEVOLO DLAN 500 AVPLUS

Approx £120

What's faster than Ethernet? Devolo's dLAN powerline networking technology. With the dLAN 500, up to four HDTV streams can be transmitted simultaneously. Connecting computers, consumer electronics and other digital devices located anywhere in the home with a network connection, the dLAN 500 AV adapters are particularly well suited to high performance home networks that access high-speed Internet connections such as VDSL and fibre-optic networks, and incorporate data encryption.

www.devolvo.co.uk



HDANYWHERE ACTIVEWIRE CABLES

From £40

Time you upgraded your HDMI cables to v1.4? Try the HDAnyWhere range from ActiveWire. The entire HDMI v1.4a feature set is supported, including full HD video (1080p video resolutions and beyond), 3D content, 4K resolutions, Audio Return Channel (ARC) and dedicated data channel. Construction includes lightweight aluminium headshell, 24K gold contacts and high-density shielding and you get a lifetime warranty.

www.hdcable.co.uk

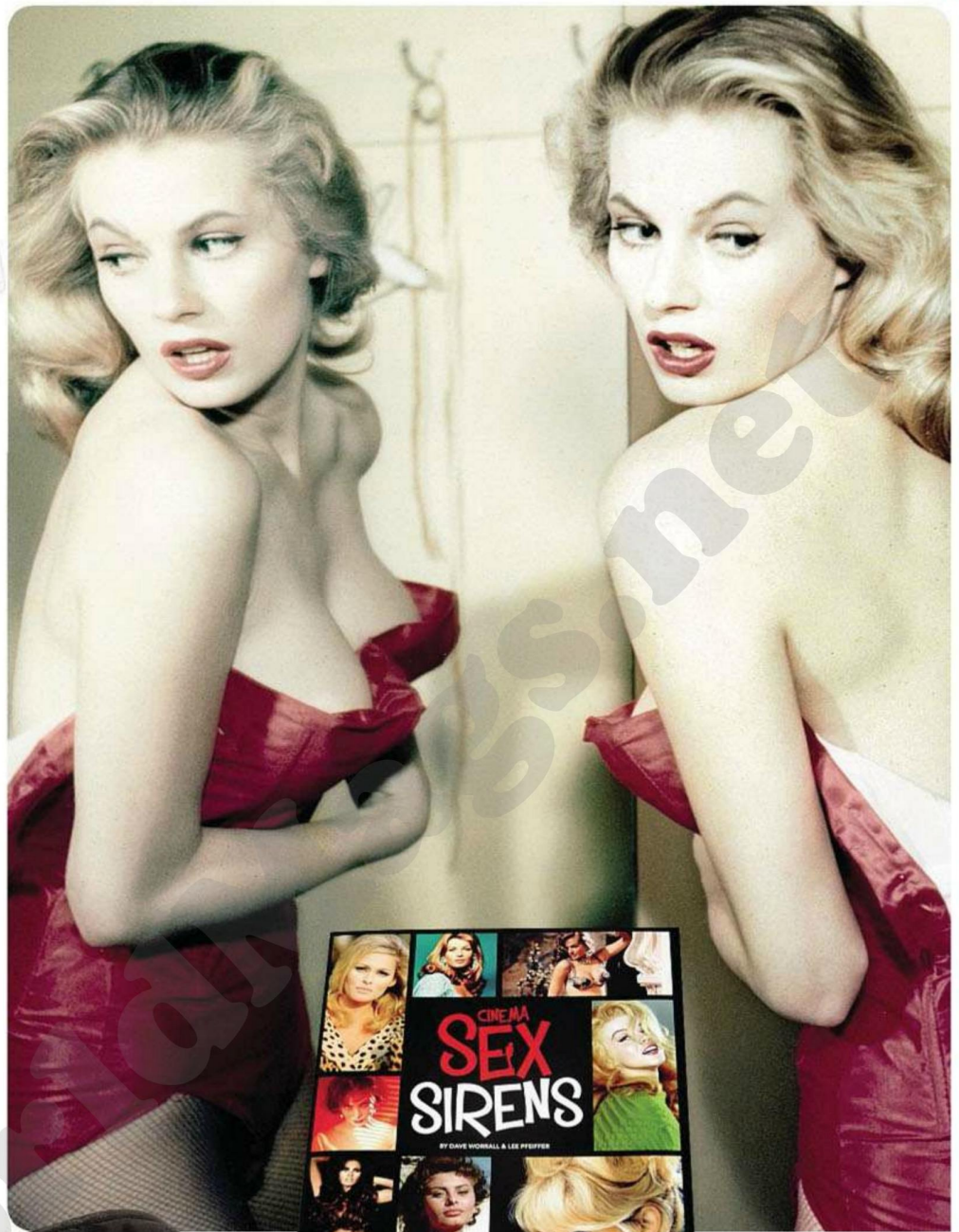


IHEADPHONES BEDPHONES

Approx £30

Fancy listening to some music or TV in bed, but can't find comfortable headphones? Try Bedphones, featuring ultra-light, super-slim foam-cushioned earpieces and mouldable memory wire joiners.

www.ihheadphones.co.uk



Busting out: Anita Ekberg is one of the Cinema Sex Sirens

CINEMA SEX SIRENS

Approx £25

Written by CinemaRetro magazine stalwarts, Dave Worrall and Lee Pfeiffer, and featuring an introduction by ex-James Bond, Sir Roger Moore, this romp through the annals of movie glamour features hundreds of glossy pics of '60s and '70s stars such as Brigitte Bardot, Helen Mirren, Sophia Loren, Natalie Wood, Ann-Margret, and Raquel Welch. Not forgotten in this lineup of international talent are the home-grown Hammer starlets such as Ingrid Pitt, Britt Ekland, Valerie Leon and Madeline Smith, whose popularity with fans remained long after their cinematic careers faded. Featuring biographies, filmographies, poster artwork and magazine covers, the book is a droolsome 160 pages bursting with er, cinematic erudition. And lots of cleavage.

www.omnibusspress.com



ARCAM RCUBE

Approx £350

Last year it was £500 - this year it's being relaunched at £350, so now you can drool again over Arcam's quality iPod dock, with its wireless streaming capability, rechargeable Lithium-ion battery, eight-hour charge time, 90W output and Advanced Klear lossless sound technology.

www.arcam.co.uk



SCENES HD A DAY IN THE FINNISH ARCHIPELAGO

Approx £21

If you want a relaxing start or end to your day, try sliding this ambient landscape disc into your Blu-ray player. This all-region disc features six 30-minute scenes from 'the most beautiful archipelago in the world', in full HD video with an AC3 stereo/4.0 LPCM nature soundtrack. Shot in the Åland Islands, Turku Archipelago and the coast of the Gulf of Finland, the videos cover a summer day from dawn till dusk.

www.sceneshd.com

TIVOLI AUDIO PAL+ DAB/FM RADIO

Approx £249

Tivoli Audio has updated its popular PAL (Portable Audio Laboratory) radio with a DAB/FM model, the PAL+. Available in five funky colours, the mono audio PAL+ features DAB, DAB+, DMB and FM RDS reception; a magnetically shielded 2.5ins full-range driver; a Nickel Metal Hydride rechargeable battery; alarm clock function; stereo audio input and output; adjustable backlight and full-function remote control with holder and tone controls presets. Reception in marginal areas seems particularly good, and the sound quality from this compact box almost justifies the hefty price.

www.tivoliaudio.co.uk



AQ AIRPLAY SMART SPEAKER

Approx £220

The Smart Speaker features Apple's new Airplay wireless streaming, so it can liberate your music collection from your iPhone, iPod, iPad or laptop and send it shooting through the ether. The 24W output power system features a 30-hour rechargeable battery and two drivers designed to deliver channel-separated sound from a single enclosure. An ultra-efficient digital amplifier and custom ALLROOM wave dispersion technology make sure your space is filled, and there's an option to set up stereo pairs. Of course, a control app for smart devices is available, too.

www.aqaudio.com





DUNE HD MAX



Key Features

- **The newest Sigma Designs 8642 media processor:** enjoy excellent playback and performance of interactive features.
- **Blu-ray and DVD player:** play Blu-rays and DVDs (plus Audio CD and data discs with video/music/photo files).
- **HDD player:** connect an HDD to the player and play content directly from the HDD.
- **Network player:** connect the player to a local network and play content directly from PC or NAS (UPnP, SMB, NFS).
- **MKV player:** play HD and SD video in a popular MKV format and other modern video file formats, including top quality HD video with very high bitrate.
- **RealD:** watch 3D video in this ultra modern format used in cinema for the latest movies.
- **HD audio:** enjoy top-quality audio tracks (Dolby True HD, DTS HD Master Audio, LPCM, FLAC).
- **3 USB ports:** conveniently connect HDDs, USB flash drives, USB card readers and other USB storage devices.
- **HDD rack with hot swap function:** easily and quickly insert and exchange internal 3.5" SATA HDD.
- **SD card slot:** easily play media files on SD memory cards from your camera or other devices, or use an SD memory card as a local or system storage (required for BD Live function).
- **HDMI 1.3:** ensure the best possible quality of HD video and HD audio.
- **A rich set of standard A/V connectors:** use S/PDIF optical audio, stereo audio, component video, composite video outputs to easily connect any A/V equipment.
- **Extended support for Dolby True HD and DTS HD Master Audio:** output bitstream (up to 7.1 channels) or decode to LPCM (up to 7.1 channels) for maximum flexibility when connecting audio equipment, and for extended support of advanced playback features (such as Picture-in-Picture).
- **Video output flexibility:** output video in any resolution and format (from SD to 1080p, 24p/PAL/NTSC).
- **Upscaling:** high quality upscaling of DVD and any other SD video content to Full HD (1080p) or other HD resolution.
- **File browser:** convenient file browser with powerful file management (copy, move, delete, rename, organize, sort).

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inc VAT &
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Cinema with a licence to thrill



In the same way that film makers go to great lengths to create spectacular, unforgettable movies, DSE invests all of its effort and expertise to ensure that your new home cinema is a sure-fire blockbuster.

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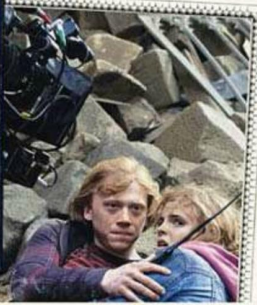
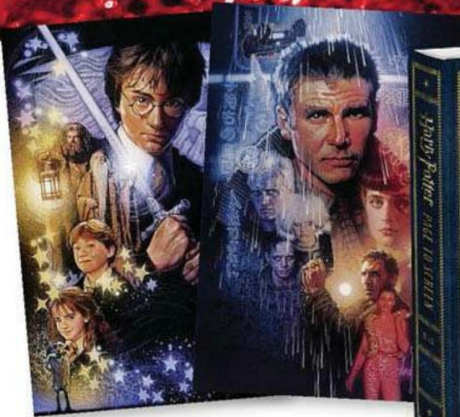
Whatever your taste and wherever the space, we'll help you to find a home for the ultimate HD entertainment experience! To find out more please call **0191 491 4141**

TELEPHONE: 0191 4914141

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HARRY POTTER and the DEATHLY HALLOWS



NEW HARRY POTTER AND THE DEATHLY HALLOWS WAS FOLLOWED BY THE FINAL FILM OF THE SERIES, AND THE FILMMAKERS WERE PRESENTED WITH AN INCREDIBLE CHALLENGE: HOW COULD THEY CONDENSE THE HUNDREDS OF HOURS OF FOOTAGE OF THE ENTIRE SERIES - INTO ONE MOVIE? AND THOUGH THEY'VE ONLY CONSIDERED UNFOLDING SCENES UP TO TWO FILMS, THEY REALIZED THAT BY FOCUSING ON THE STORY'S ESSENTIAL ELEMENTS, they could successfully bring Harry's final year to life in a way that would be both satisfying and inspiring.

"It was one of the most difficult challenges of the series," says director David Yates. "We had to condense the story into one film, and we had to make sure that the audience could follow the story without feeling like they were missing out on anything. We had to make sure that the story was told in a way that was both satisfying and inspiring."

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TITAN BOOKS HARRY POTTER AND MORE

From approx £13

Titan Books's festive selection includes *Harry Potter: Page to Screen - The Complete Filmmaking Journey* by Bob McCabe, a fascinating look behind the making of the movies (£49.99); *Drew Struzan: Oeuvre*, a collection by the master of movie poster art (£29.99); *Marty Feldman: The Biography of a Comedy Legend* by Robert Ross, (£18.99), and *Star Wars - The Jedi Path: A Manual for Students of the Force* by Daniel Wallace, a guide to getting by in the Star Wars universe (£12.99).

<http://titanbooks.com>



THE SORTING HAT

The Sorting Hat was originally to be portrayed using a paper hat, but when the filmmakers found it was cumbersome, they decided to use a real hat. The hat was made by costume designer John Myhre. It was made of a material that was soft and pliable, and it was made to look like a real hat. The hat was made of a material that was soft and pliable, and it was made to look like a real hat.



The hat was made by costume designer John Myhre. It was made of a material that was soft and pliable, and it was made to look like a real hat. The hat was made of a material that was soft and pliable, and it was made to look like a real hat.

THE HOWLER

Graphic designer Miraphora Mina wanted to give the Howler in *Harry Potter and the Chamber of Secrets* the look of a real letter. The paper was made of a material that was soft and pliable, and it was made to look like a real letter. The paper was made of a material that was soft and pliable, and it was made to look like a real letter.



The paper was made of a material that was soft and pliable, and it was made to look like a real letter. The paper was made of a material that was soft and pliable, and it was made to look like a real letter.

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ILUV IMM514 ARTSTATION PRO

Approx £150

Available from Amazon, the iLuv ArtStation Pro is more than a stereo speaker i-Dock; it's a revolution in the way you'll use your mobile devices at home. Compatible with iPhone, iPad and iPod, the IMM514 has a rotational stand for vertical or horizontal viewing, a jAura pseudo-surround sound option, a clock display function, a choice of alarm sounds, searchable weather forecasts service, Internet Radio and more features via a free app. It also acts as a device charger, and comes complete with a remote control handset.

www.iluv.co.uk

DENON NETWORK AUDIO PLAYER

Approx £430

Denon's first network audio player unlocks all the power of a home network and links it to a stereo hi-fi system. Connected to a stereo amplifier, the 720AE enables internet radio streaming via both wi-fi and Ethernet, including the iTunes-friendly AirPlay technology. It's also compatible with Denon's App for iPod Touch, iPad or iPhone, and features DLNA 1.5 compatibility for Network Attached Storage (NAS) devices, 24-bit/192kHz digital-to-analogue audio converters, and a front positioned USB port.

www.denon.co.uk



HDBaseT technology

The Aavara PE3D4K100A is another fantastic tool for HDMI over distance. Using just a single wire it can be easily retrofitted within an existing network. HDBaseT technology allows this system to send HDMI further and at higher quality than all other conventional HDMI over CAT5 solutions. With no compression and no loss of quality you can get crystal clear 3D 1080P with 7.1 channel audio, and also have IR control, RS232 and extend your 100Mbps LAN all over the one cable!

Over one single run of CAT5 cable you can:

- send uncompressed full HD 3D HDMI with 7.1ch audio
- remotely power the receiver
- IR control the source from the receiver
- RS232 control the source from the receiver
- use the 3 port hub in the sender and receiver to extend your LAN

Code PE3D4K100A

£561.23



Request your **FREE** copies of our brochures or download them now from **www.keene.co.uk**



Aavara HDMI cables

Aavara High Definition HDMI Cables

These are top specification Hi-Definition AV Cables fully supporting all of the latest HDMI specifications, including: 3D, 4K, ARC (Audio Return Channel), HEC (HDMI Ethernet Channel). The construction features pure gold 24K plated end shell and connector with a protective braided cable sheath.

Product Features

- Works with PS3, XBOX, Blu-Ray/HD/DVD player, Set Top Box
- 1.2Gbps Ultra Wide bandwidth enable brilliant 1080p HD content and 8 channel Audio
- Exclusively Superior Diamond cutting design and stylish yellow webbing lines
- HDMI to DVI interoperability allows easy interconnectivity
- Support Dolby True HD and DTS-HD Master Audio Transmission
- Support x.v. Colour Wide Gamut and 16bit Deep Colour Video Transmission



Code HDAV2

2m version

£19.99

Code HDAV3

3m version

£24.99

Aavara Hi-Definition Pro Install HDMI Cables

These are top specification Hi-Definition AV Cables designed for Professional and Commercial installations. Designed to end the uncertainty and erratic behaviour you may have experienced from some of the other longer length cables on the market, these deliver reliable results.



Code HDPROAV5

5m

£39.99

Code HDPROAV10

10m

£59.99

Code HDPROAV15

15m

£89.99



HDMI Audio Inserter Embedder

The AU-11CA Audio Embedder lets you insert an external audio signal into any HDMI source. The device allows you to insert analogue or digital stereo and multi-channel digital surround sound signals (via Optical) to give users the capability to overcome audio issues within complex HDMI installation. The AU-11CA also repeats the HDMI signal to allow an extended total HDMI cable range.

Code AU11CA **£116.49**

GIGAVIDEO 820 Wireless HDMI Sender

At last, a cable free solution for HDMI. Any of the two HDMI inputs can be sent wirelessly up to 30m to the receiver. The signal is sent uncompressed and remains up to and including 1080p. IR feedback gives you source control from the viewing area.

- Locate your HDTV or projector wherever you want.
- Mount the receiver (out of sight)
- Switch between 4 HD sources
- Operates even through walls (typically 15m)
- Supports all 480p, 720p, 1080i and 1080p
- Built in HDMI loopthrough for local viewing
- Sends the HD signal uncompressed



Code GV820 **£299.00**

SCART to HDMI Upscaler

Converts analogue Scart or s-video into digital HDMI at a choice of resolutions up to 1080P. Great for connecting legacy equipment to an HDMI switchbox for simplifying your connections. Control is by front panel or supplied IR remote

Input signals:

- Scart (RGB or composite)
- s-video
- NTSC or PAL

Outputs:

- HDMI output 720p, 1080p, 1680x1050, 1360x768 and a choice of screen modes (16:9, 16:10, expand & subtitle).



Code HDUSPRO **£79.99**

Component to HDMI Converter

Component Video to HDMI Converter

Takes in component video and stereo audio and gives you out HDMI up to 1080P. It's simple, small, neat, and it works really well.

Supported Component input resolutions: 480i/P, 576i/P, 720P, 1080i/P

Video input: 3 x RCA phono

Audio input: 2 x RCA phono

Video Output: HDMI socket

Dimensions (WxHxD): 84 x 28 x 76mm



Code CHUCH **£54.99**

Felston Digital Audio Delay

If you own an A/V amplifier the DD740 is the definitive answer to lip sync error for up to four sources

- 680ms delay (340ms for 9 kHz signals)
- On-the-fly adjustment with no image overlay
- 36 user preset delays
- Remote control
- Automatic optical/coax conversion
- 4 digital audio inputs, 2 digital audio outputs



Code DD740 **£199.00**

Keene IR Distribution Amplifier

- Discrete Fascia mount receiver routes IR signals to internal wands
- Control all your equipment even when inside a cabinet
- Works with all popular remotes
- Complete system, easy to install and ready to use



Code IRBKITF **£49.00**

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All prices include VATE & OE. All prices correct at time of print. Please check **www.keene.co.uk** for the latest information!



PLAYBACK

→ **Software highlights** **TRANSFORMERS: DARK OF THE MOON** Showcase material par excellence **THE LION KING 3D** Disney reigns supreme with this animation **PULP FICTION** What's French for quarter pounder with cheese? **HOOK** Costumes and adventure caper
 → **Opinion** **DOWNLOAD CENTRAL** Is the Xbox 360 key to video on-demand? **AND MORE!**

Lord of the ring

Green Lantern: Extended Cut - Triple Play
 Warner Home Video All-region
 BD/R2 DVD

The classic DC Comics icon hits Blu-ray, but will this blockbuster make other superheroes turn green with envy? Turn to page 93 to find out



HCC Ratings key

Green Goblin	1 2 3 4 5
Green Arrow	1 2 3 4 5
Green Lantern	1 2 3 4 5
Green Hornet	1 2 3 4 5
Captain Planet	1 2 3 4 5

It was just
another day
on the M25



Pure mechanoid magic

This 7.1 audio mix and flawless 1080p encode is ideal home cinema demo fodder

→ Transformers: Dark of the Moon



HCC VERDICT

Transformers: Dark of the Moon
– Triple Play → Paramount → All-
region BD/R2 DVD → £25 Approx

We say: One of the best demo
discs money can buy

Picture: **1 2 3 4 5**

Sound: **1 2 3 4 5**

Extras: **1 2 3 4 5**

Movie: **1 2 3 4 5**

Overall: **1 2 3 4 5**

After the unspeakable cinematic horror of *Transformers: Revenge of the Fallen*, it's a miracle that Michael Bay could make a case for another instalment. But the resulting 3D sci-fi epic went on to take more than \$1billion at box offices globally. *DotM* improves on its predecessor by ditching most of the inane humour and racism that plagued that flick. It also delivers some of Bay's most accomplished set pieces to date, helped by having to curb his usual hyperactive style by shooting the film in 3D.

However, the plot is insultingly stupid and nonsensical, while the pacing is all over the place. The acting is diabolical, especially the new female lead. And Bay still insists on shooting a film that's for little kids (it's based on a line of toys, remember) as if it were a *Playboy* shoot.

Chris Jenkins on pictures: Like *Avatar* before it, *Transformers: DotM* is another native 3D blockbuster that is only being released at retail in 2D form on Blu-ray for the immediate future. Plans are in place for a feature-packed 3D Ultimate Edition Blu-ray, but as we go to press Paramount has yet to confirm a release date.

While the lack of a 3D version of the film is disappointing, it's made up for by the decision to give the film a barebones release and max

out the bitrate for the picture and sound quality. This means that, despite a butt-numbing 154min running time, this BD-50 release has all the space it needs to deliver one of the most incredibly detailed and robustly coloured AVC 2.40:1 1080p encodes I've ever seen. The clarity and detailing is so strong that you can make out all of the intricate mechanisms in the slo-mo shots of the Transformers during action scenes such as Chapter 10's freeway chase.

I couldn't find a single flaw in the image just a solid, vibrant and textured HD transfer. It's reference quality demo material from the start.

Mark Craven: From the moment you click Play you know that *Transformers: DotM*'s DTS-HD MA 7.1 mix is going to be something special. The precise directional effects really wow, as do the action scenes, and there's plenty to choose from.

Anton van Beek: This initial Blu-ray release is entirely devoted to optimal AV performance, and as such comes with no disc-based features. The only extra content included is the usual Triple Play offering of a DVD plus a Digital Copy of the movie.



Bridesmaids: Triple Play

Universal Pictures → All-region BD/R2 DVD → £25 Approx



While sharing many of the same themes of a female-centric romcom, *Bridesmaids* is actually a biting

funny comedy that delivers multiple laughs, and firmly establishes lead actress/co-writer Kristen Wiig as Hollywood's hottest comedy star. This Blu-ray release serves up a glittering AVC 2.40:1 1080p encode and a lively DTS-HD MA 5.1 mix that's as happy with dialogue as it is with projectile vomiting. Substantial extras include Theatrical and Extended cuts of the film, a commentary and the usual multitude of outtakes. **MC**



Senna: Triple Play

Universal Pictures → All-region BD/R2 DVD → £25 Approx



Comprised exclusively of archival footage, combined with contemporary interview voice-overs, this documentary about the life and death of Formula One legend, Ayrton Senna, was never going to wow you with its AV credentials. But it will certainly thrill fans with its spectacular mix of race footage, home movies and candid behind-the-scenes material. The DTS-HD MA 5.1 mix fares a bit better than the VC-1 1.78:1 encode thanks to some throbbing engine noise and the subtle music score. Extras include an extended cut. **AvB**



Mother's Day

StudioCanal → Region B BD → £20 Approx



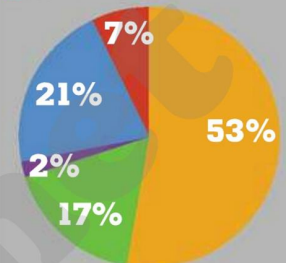
Darren Lynn Bousman's remake of the Troma 'classic' mixes up a house full of yuppies with a trio of desperate bank robbers, and their iron-willed matriarch, and lets the sparks fly. Playing with tension rather than gore (although it's still a bit icky in places), it makes for an effective thriller with plenty of twists and turns, some social commentary and a superb central performance from Rebecca De Mornay as the titular Mother. The stylish cinematography is well served by the handsome AVC 2.40:1 1080p encode, while the DTS-HD MA 5.1 audio is big on atmospherics. **AvB**



We asked you...

Is your home cinema system capable of Blu-ray playback?

- Yes, I've got a dedicated BD player
- Yes, I've got a PS3
- Yes, I've got a BD-compatible PC/media server
- Yes, My system has several BD components
- No



Results of poll from www.homecinemachoice.com

Thin green line polices outer space

Comic book supercop provides moderate diversion despite sick-making colour palette



→ Green Lantern

While he's been a mainstay of DC Comics' superhero pantheon since 1960 (in this incarnation, at least), *Green Lantern* isn't a particularly recognisable name

for most people. As such, this sci-fi blockbuster had its work cut out not only introducing its hero Hal Jordan (Ryan Reynolds) and his supporting cast, but also establishing the concept of the intergalactic police force he ends up working for, the Green Lantern Corps. Add to that a melodramatic back story and two separate villains, and it's no wonder that the film struggles under the weight of its ambitious scope. So it's surprising how thin and uneventful the film ends up feeling. While the space stuff looks great, most of the action takes place on Earth and looks ordinary and unexciting by comparison.

Chris Jenkins: For a film about a character whose sole super power is the ability to create whatever he can imagine from the green light of his magic ring, *Green Lantern* boasts an oddly muted colour scheme. It's almost as if the filmmakers thought that Hal's bright green CGI suit could only work if grounded in the real world, so the AVC 2.40:1 1080p transfer mainly aims to contrast this with deep, sometimes crushed, blacks and a palette of interiors that veers between steely blues and autumnal reds. While colour reproduction is good throughout, the image does struggle with fine detail from time to time. But the CG characters look absolutely fantastic.

Mark Craven: This Blu-ray's DTS-HD MA 5.1 soundtrack is pure whiz-bang superheroics from start to finish. There's excellent use of the entire



HCC VERDICT

Green Lantern: Extended Cut – Triple Play
Warner Home Video → All-region BD/R2 DVD → £25 Approx

We say: Never really takes off

Picture: 1 2 3 4 5

Sound: 1 2 3 4 5

Extras: 1 2 3 4 5

Movie: 1 2 3 4 5

Overall: 1 2 3 4 5

soundstage throughout the film with an endless supply of directional effects, plenty of pounding bass and pitch-perfect dialogue rendering. It's about as absorbing and involving as film soundtracks get.

Anton van Beek: Excluding the bonus DVD and Digital Copy of the film, this Triple Play Blu-ray offers up a batch of extras every bit as mediocre as the film they support. In addition, to Theatrical (114min) and Extended (124min) Cuts of the movie, there's also a Maximum Movie Mode for the shorter version (albeit in a more traditional picture-in-picture form than usual) with branching to eight Focus Point featurettes (also available directly from the Special Features menu), a 20min featurette about *Green Lantern*'s comic book history, a chat with Ryan Reynolds, four deleted scenes, a *Justice League* #1 Digital Comic and a preview of *Green Lantern: The Animated Series*.

Film Fanatic

The Beek asks what is the function of the British Board of Film Classification in today's digital world, when adults can buy their Blu-rays on the internet?



The past 12 months has seen the British Board of Film Classification facing some of its trickiest classification decisions in years.

The double-whammy of Steven R Monroe's remake of *I Spit on Your Grave* and Srdjan Spasojevic's *A Serbian Film* passing through the organisation's doors must surely have caused some of the examiners to take a sharp intake of breath. The BBFC suddenly found itself passing judgment on two extremely controversial films dealing with sexual violence. *I Spit on Your Grave* escaped with just 43secs of cuts, while *A Serbian Film* (the more troubling of the two) needed a whopping 251-second cut before the Board would grant it a certificate for release in the UK.

Naturally, UK-based cinephiles – particularly horror fans – were up in arms, citing it as clear proof that we were facing a return to the bad old days of the Video Nasty and rampant censorship.

Meanwhile, Christopher Sun's *3D Sex and Zen: Extreme Ecstasy* was lucky enough to make it to UK cinemas with 168secs of 'sexual and sexualised violence' snipped. However, Tom Six's *Human Centipede II (Full Sequence)* was initially rejected outright, on the basis that the Board



believed it 'poses a real, as opposed to fanciful, risk that harm is likely to be caused to potential viewers', before finally being given an 18 certificate (with cuts) several months later,

after lengthy discussions with the film's distributor.

These decisions prompted us to do a quick poll on the HCC website asking about whether people agree with film censorship. And of the 648 voters, **only 16% (101 votes) said they agreed with film censorship. A much more sizeable 47% (302 votes) were completely against it.**

I side with the remaining 245 votes that chose the poll's third option: 'This is far too complex a subject to be properly covered by a simple 'Yes/No' question'. Having grown up during the Video Nasties debate, I have no desire to return to that kind of draconian censorship. While I understand the importance of protecting small children from potential harm, as an adult filmgoer, I want to be able to choose for myself what I want to watch.

And thanks to the reach of the internet, the world of import sales now continues onto Blu-ray and we can all do exactly that. So what purpose does the BBFC actually serve in the digital world we now inhabit? Maybe it's time for the organisation to give up on censorship altogether and, as its name suggests, simply concentrate on classifying films.

Hook

Sony Pictures → All-region BD → £15 Approx



Despite its success with audiences back in 1991, Spielberg's *Peter Pan* follow-up has clearly not held up as well as his other family classics. And given the surprisingly barebones nature of this Blu-ray release, it seems that even Spielberg himself is uninterested in revisiting the film for any kind of supplementary material. For fans,

this Blu-ray release does offer an attractive AVC 2.40:1 1080p encode that makes the most of the extravagant sets and costumes (despite a hint of some digital filtering in places) and a playful, enveloping DTS-HD Master Audio 5.1 soundtrack. **AvB**

1 2 3 4 5

The Nightmare Before Christmas 3D

Walt Disney → All-region BD → £30 Approx



Produced and co-written by Tim Burton, this deliciously dark 1993 stop-motion animation became one of the forerunners of the current 3D boom when the 2D film got a stereoscopic conversion back in 2006. But the film's dark palette doesn't always lend itself to an immersive 3D experience. The 3D encode is framed at

1.78:1, rather than the original 1.66:1, and eliminates the DNR from the original 2D disc at the cost of some sharpness. At least the 7.1-channel audio is as thrilling as ever.

This set also includes the 2D Blu-ray disc, with all of the original bonus features. **AvB**

1 2 3 4 5

Beauty & the Beast 3D: Diamond Edition

Walt Disney → All-region BD → £30 Approx



Way back in HCC #189, we were bowled over by Disney's sensational Blu-ray treatment of its 1991 animated classic *Beauty & the Beast*. Fast-forward a year and the same rings true of this sublime 3D conversion. The film's 3D MVC 1.78:1 1080p imagery is not only more cohesive than

The Lion King 3D, it's also considerably more striking in its use of depth in the locations and mass in the character models. Meanwhile the DTS-HD MA 7.1 audio is just as involving as ever. As with all Disney 3D releases, this set also includes the original 2D Blu-ray release as well. **AvB**

1 2 3 4 5

Rio 3D : Carnival Party 3D Edition

20th Century Fox → All-region BD/Region B BD/R2 DVD → £30 Approx



This CG-animated feature about a rare parrot called Blu, who grows up as a pet in Minnesota, only to end up 'bird-napped' and on the run in Brazil, features more than enough quick-fire gags to win over its target audience. This bumper Blu-ray release sports a barebones 3D disc (locked to Region B), while boasting an excellently

rendered stereoscopic MVC 2.40:1 1080p encode and a feature-packed 2D disc (all-region) with even more impressive AVC 2.40:1 1080p visuals. Both discs offer up an identical equally strong and particularly lively DTS-HD MA 5.1 soundtrack. **AvB**

1 2 3 4 5

I didn't get where I am today
by being vegetarian



The mane event is a stunner

Disney takes pride in an animation that's truly a work of art in 2D and 3D HD

→ The Lion King 3D

A box office sensation on its original cinema release in 1994, the film then smashed box office records again earlier this year during its limited 3D re-release in cinemas. So it's hardly surprising that many people consider *The Lion King* the absolute pinnacle of Disney's animated features. There's no denying the captivating power and skilful storytelling at the heart of this remarkable film.

Chris Jenkins: *The Lion King* looks nothing less than incredible on Blu-ray. The 2D AVC 1.78:1 1080p encode bursts into life with eye-popping colours and a stunning sharpness that brings the best out of the character animation and backgrounds. Blacks are rock solid, detailing is impeccable and there are no digital anomalies.

For the most part, the same comments apply to the film's MVC 1.78:1 1080p 3D incarnation. As always with stereoscopic material there's a slight trade-off in vibrancy and sharpness, but there's very little ghosting and none of the artefacting we've encountered on other 3D releases. Colour banding appears on a couple of occasions, but you'll be too busy dodging charging wildebeest and pouncing lion cubs to care.

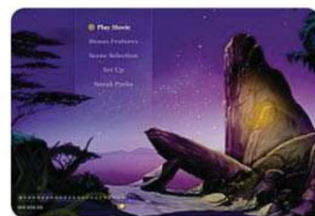
Mark Craven: Both presentations of the film feature an identical DTS-HD Master Audio 7.1 remix – and it's an absolute

joy from start to finish. The opening bars of music send a shiver down the spine, culminating in the rich tonal range of *Circle of Life* as Simba is presented to his subjects. While it's the music that truly drives the mix, every other element, from dialogue to Foley effects, is equally impressive. And there's some convincing use of the surrounds during more action-packed scenes such as the wildebeest stampede and the film's fiery finale.

Anton van Beek: Disney continues to include separate 2D and 3D platters in its stereoscopic Blu-ray releases.

This Diamond Edition of *The Lion King* offers a typically fan-pleasing collection of material including an audio commentary by co-directors Roger Allers and Rob Minkoff, a 4min animated *Bloopers and Outtakes* reel, the wonderful new 38min retrospective documentary *Pride of The Lion King*, a 20min look back at the development of the film presented by producer Don Hahn, five deleted/alternate scenes with director intros, a Sing-Along mode, *The Morning Report* musical number animated for the 2002 IMAX version, an extensive interactive gallery containing more than 400 images and the usual *Discover Blu-ray 3D*

with *Timon & Pumbaa* animated promo. A Digital Copy is also on offer. More extras are accessible via the disc's BD-LIVE-powered Virtual Vault.



HCC VERDICT

The Lion King 3D: Diamond Edition → Walt Disney → All-region BD → £30 Approx

We say: Disney's latest Diamond Edition is the undisputed king of the animated Blu-ray jungle

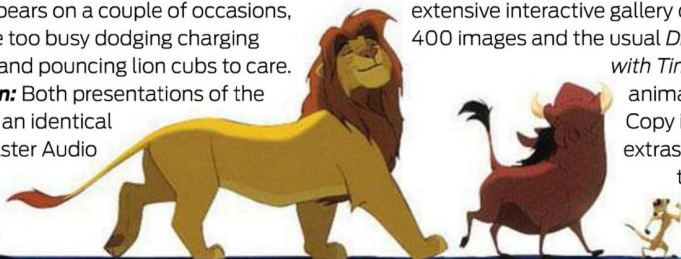
Picture: 1 2 3 4 5

Sound: 1 2 3 4 5

Extras: 1 2 3 4 5

Movie: 1 2 3 4 5

Overall: 1 2 3 4 5



Stakes are raw and well done

A vampire-ridden world is the setting for atmospheric thrills and desaturated chill



→ Stake Land

Playing out a bit like *The Road*, albeit with monsters lurking around every corner, Jim Mickle's *Stake Land* follows a small group of survivors as they try to reach safety in a post-apocalyptic world overrun by a vampire epidemic. It's a place you want to explore, to see more of. And it certainly doesn't hurt that it's also populated by the most vicious and bloodthirsty vampires to hit the silver screen in many a year.

Chris Jenkins: Presented via an AVC 2.40:1 1080p encode, *Stake Land*'s visuals are generally sharp and detailed, albeit tinged with moments of black crush and a flatness that is typical of material shot using Red One cameras. Technical flaws such as artefacting and edge enhancement are nowhere to be found, although minor banding does occur from time to time in the intentionally desaturated palette. Overall, this Blu-ray boasts a commendable hi-def encode that does everything that is asked of it.

Mark Craven: *Stake Land* boasts a surprisingly atmospheric DTS-HD MA 5.1 soundtrack. Whether it's simply effects such as the sounds of insects in the woods, or more directional content such as the noise of a helicopter buzzing across the speakers, the mix makes constant use of the entire soundstage with incredibly accurate and convincing panning effects throughout. The subwoofer doesn't miss out on the action either,



The vampires were all heavy smokers

with many of the vampire attacks backed up by some serious bass hits. Meanwhile, both the dialogue and subdued score are handled with aplomb.

Anton van Beek: This Blu-ray disc comes loaded with an interesting collection of extras. Detailed accounts of the creation of the film can be found in the two feature-length commentary tracks included on the disc, as well as the 62min *Making of Stake Land* documentary (which relies a little too heavily on raw behind-the-scenes footage rather than interviews). There's also the excellent 15min *Director's Pre-Production Diary*, which looks at the film's evolution from a web series to a full-blown feature. A 2min reel of *VFX Breakdowns* and a collection of six webisodes round things off.

HCC VERDICT

Stake Land → Metrodome
→ All-region BD
£25 Approx

We say: An impressive hi-def package makes this satisfying vampire flick worth a quick bite

Picture: 1 2 3 4 5

Sound: 1 2 3 4 5

Extras: 1 2 3 4 5

Movie: 1 2 3 4 5

Overall: 1 2 3 4 5

Maniac Cop

Arrow Video → All-region BD → £28 Approx



This blood spattered tale of a killer cop out for revenge on the city that wronged him has been

re-animated for Blu-ray by Arrow Video and is as gloriously daft as ever. Previous Arrow titles have suffered from over-zealous DNR scrubbing and the subsequent addition of digital grain. Thankfully, this movie's AVC 1.85:1 1080p encode isn't one of these – the grain here looks entirely natural (with a hint of contrast-boosting). There's a fairly thin LPCM 2.0 stereo mix, and extras include lengthy interviews with writer Larry Cohen and actors Tom Atkins and Laurene Landon. **MC**

1 2 3 4 5

The Woman

Revolver Entertainment → All-region BD → £16 Approx



This controversial shocker from director Lucky McKee takes a satirical look at the extreme limits of

misogyny via the tale of a proud family man who tries to 'civilise' a feral woman he finds in the woods. The result is uncompromising, but works well even if it doesn't always get its tone quite right. The Blu-ray features a suitably dark but detailed AVC 1.85:1 1080p encode and a choice of LPCM 2.0 or front-heavy DTS-HD MA 5.1 audio. Extras include a *Making of...*, three deleted scenes, a full song from the soundtrack (audio-only) and a 46min panel debate about US horror from this year's FrightFest. **AvB**

1 2 3 4 5

The Ward

Warner Home Video → All-region BD £20 Approx



John Carpenter's return to horror cinema finally hits Blu-ray in the UK in the correct aspect

ratio. Sadly, this tale of revenge from beyond the grave at a psychiatric hospital in the late '60s doesn't really mark a return to form for the director. But while the story isn't great, Carpenter's command of the 2.40:1 ratio is still supreme and can be fully savoured in HD thanks to a film-like AVC 1080p encode, supported by an involving Dolby TrueHD 5.1 audio. Extras include EPK interviews with the cast and crew, but the commentary from the US release is not present. **AvB**

1 2 3 4 5

V: Season 2

Warner Home Video → All-region BD £35 Approx



With large budgets, sci-fi TV shows can now deliver the kind of special effects and action that today's

audience demands. So it's no wonder that *V* has been remade, but did it have to be done so badly? This second season of the cancelled show brings back '80s *V* actress Jane Badler, but struggles to deliver anything more than soap opera-style plotting and lack of characterisation. The two-disc Blu-ray includes colourful AVC 1.78:1 1080p encodes for all 10 episodes that are sometimes prone to banding, plus punchy DTS-HD MA 5.1 audio. Extra features are rather limited. **AvB**

1 2 3 4 5

O! PLAY GALLERY

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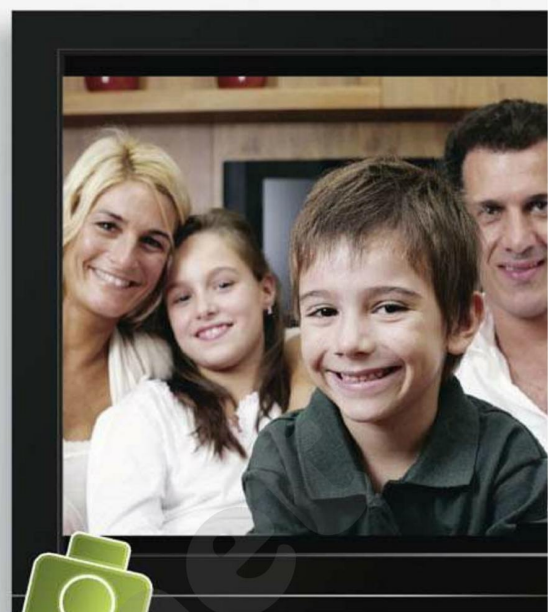
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Horror icon who cannot die

Freddy Krueger marathon on 7-disc boxset is released to delight terror freaks



Freddy's manicurist was still away on holiday

→ A Nightmare on Elm Street Collection

The recent remake may have done its best to kill him off for good, but Freddy Krueger remains the definitive '80s horror icon. As proven by this collection of the original seven films in the series, Freddy's film career has been as hit and miss as they come, but *A Nightmare on Elm Street*, *ANoES 3: Dream Warriors* and *Wes Craven's New Nightmare* are true genre greats. And even the misbegotten likes of *The Dream Child* and *Freddy's Dead* always have Robert Englund's performance and inventive visual effects to fall back on.

Chris Jenkins: While none of the seven films will necessarily bowl you over with their hi-def visual prowess, they're still far from being the stuff of nightmares. The original film gets a disc to itself, and its VC-1 1.85:1 1080p encode makes the most of the space, delivering a finely grained and pleasingly detailed image.

The next three BD50s in the set squeeze two films onto each – but this doesn't appear to impact the image quality in any obvious way. The new AVC 1.78:1 1080p encodes for the six sequels definitely aren't based on old masters, being completely reframed in a couple of instances and revealing significantly more picture information in the process. Several now look much darker, resulting in loss of shadow detail in some shots, but on the whole detail is greatly improved across the entire range. Colour reproduction is particularly strong throughout and the ever present grain looks suitably film-like.

Mark Craven: The original movie features the same DTS-HD MA 7.1 remix and Dolby Digital mono soundtracks that appeared on the film's standalone Blu-ray disc. The later naturally sound

rather thin and (oddly) quiet, while the former features an excellent stereo spread across the front of the soundstage. That said, the choice of 7.1 rather than 5.1 seems a little arbitrary as (outside of the extension of atmospheric effects and the film's score) there's not that much activity in the rears, and definitely nothing that needs dedicated rear and surround channels.

The other six films all feature DTS-HD MA 5.1 remixes alongside a Dolby Digital presentation of the corresponding original theatrical mix (1.0 for *Freddy's Revenge* and *Dream Warriors*, 2.0 Surround for the remaining sequels). For the most part, the lossless 5.1 remixes are much akin to the original's 7.1 track. The first two sequels have no dedicated surround effects, only serving to open up the music and certain sound effects also present in the front of the mix.

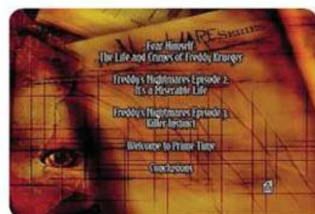
The Dream Master steps things up a bit with dedicated atmospheric effects in the rears on a number of occasions. *The Dream Child* sees things getting a little more adventurous, before *Freddy's Dead* really steps up to the plate with the booming bass of a dripping tap and thunderous rain of falling pins during Carlos' nightmare in Chapter 11. While still slightly subdued compared to more modern films, *New Nightmare* surmounts them all with surround sound treats like Chapter 3's earthquake and the truck racing overhead in Chapter 24.

Anton van Beek: As the disc for the original film is identical to the previous stand-alone release, it's no surprise that it features the same bonus material: two commentaries; 24 branching *Focus Point* featurettes; two documentaries; three alternate endings and a trivia track.

Most of the remaining extras in the set have been culled from the *Nightmare Series Encyclopaedia* that appeared in the old R1 DVD boxset (a first for UK viewers). Only now the film-specific interviews, music videos and trailers are grouped with the relevant sequel. A final bonus DVD includes the new 30min retrospective documentary *Fear Himself: The Life and Crimes of Freddy Krueger*, plus episodes two and three of the *Freddy's Nightmares* TV series.



She had to get the hat surgically removed



HCC VERDICT

A Nightmare on Elm Street Collection → Warner Home Video → All-region BD/R2 DVD → £40 Approx

We say: It's sweet dreams for Freddy's fans

Picture: 1 2 3 4 5

Sound: 1 2 3 4 5

Extras: 1 2 3 4 5

Movie: 1 2 3 4 5

Overall: 1 2 3 4 5

The Frighteners

Universal Pictures → All-region
BD → £20 Approx



Unlike its earlier HD-DVD release, this Blu-ray includes both the Theatrical Cut and 12-min longer

Director's Cut. While they still suffer from edge enhancement, the imagery has been given a quick spit n polish, looking obviously cleaner and clearer. Better still is the DTS-HD MA 5.1 audio, which excels in every regard – from hectic action like Chapter 11's prison fight to the surround remix of *Don't Fear the Reaper* over the end credits. A 3hr 45min *Making of...* doc, 45min storyboard reel, commentary, trailer and D-Box Motion Code provide the icing on this delicious Blu-ray cake. **AvB**



Candyman

Universal Pictures → All-region BD
£20 Approx



Bernard Rose's film adaptation of Clive Barker's short story *The Forbidden* remains a powerful

addition to '90's horror. But this Blu-ray's VC-1 1.85:1 1080p imagery is slightly inconsistent. While some shots are beautifully detailed and filmic, others look flat and have a green tinge to the shadows (probably a source issue). Far better is the DTS-HD MA 2.0 Surround mix, with its dynamic front-end and excellent treatment of Tony Todd's baritone vocals, but disappointingly, the disc is barebones, offering none of the extras from the Collector's Edition DVD. **AvB**



The Guns of Navarone: 50th Anniversary Edition

Sony Pictures → All-region BD
£20 Approx



Grainy with fluctuating contrast levels, J Lee Thompson's 1961

WWII epic is not the prettiest Blu-ray restoration you'll ever see. But given the well-documented issues with the original source elements, this is another superb effort from Sony Pictures. Despite the odd problem, the disc's AVC 2.35:1 1080p encode (taken from a new 4K scan) is the best the film has ever looked since its original cinema run. Less problematic is the DTS-HD MA 5.1 rendition of the film's soundtrack. **AvB**



Silent Running: Limited Edition

Eureka! – Masters of Cinema → Region B BD → £23 Approx



Another fruit of Eureka's recent deal with Universal comes in the form of this beautiful Blu-ray

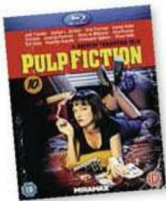
edition of Douglas Trumbull's moving, eco-themed, 1972 sci-fi classic. The AVC 1.85:1 1080p encode is based on a new UK restoration of a 35mm interpositive source provided by Universal and the resulting clarity and colour presentation is simply incredible. The DTS-HD MA 2.0 audio is bright and clear, and is joined by a similarly lossless Music and Effects track. Extras include a booklet, commentary, archival *Making of...*, a trio of interviews and the trailer. **AvB**



In the same ball park as brilliant

This mother-***ing blu-ray encode just explodes from the screen

→ Pulp Fiction



Heralded by some as the best film of the '90s, Quentin Tarantino's breakout hit remains a thoroughly entertaining slice of crime fiction. Despite the fact that many of its best tricks have since been endlessly repeated by less

talented filmmakers, Tarantino's trademark dialogue and inventive, intertwined structure still feels fresh and exciting in the context of this movie. As does the casting, which is every bit as self-aware and self-satisfied – but still satisfying – as the script itself.

Chris Jenkins: This Blu-ray packs a brand new AVC 2.40:1 1080p encode of that was 'remastered under the filmmaker's direct supervision' and *Pulp Fiction* has simply never looked better than it does here. Colours pop from the screen thanks to their vibrancy, blacks are infinitely deep and the amount of fine detail in the image often staggers the mind. Okay, the grain sometimes looks a little filtered, there's a smidgen of edge enhancement in a few of shots and the contrast runs a little hot in places (intentionally?), but in every other regard this Blu-ray is a resounding success.

Mark Craven: This movie is remembered as fondly for its soundtrack as for the film itself, and the good news is that this Blu-ray pulls out all the stops with its DTS-HD MA 5.1 mix. Dialogue and music is tonally perfect, while precisely positioned effects pan across the entire soundstage. *Pulp Fiction* packs plenty of punch in its mix and is a textbook example of how creative use of a 5.1-channel soundstage can add to any type of film, not just your typical summer blockbuster.



The car advert had only mentioned one careful owner



HCC VERDICT

Pulp Fiction
Lionsgate →
Region B BD → £20 Approx
We say: Does Tarantino's modern classic proud

Picture: 1 2 3 4 5

Sound: 1 2 3 4 5

Extras: 1 2 3 4 5

Movie: 1 2 3 4 5

Overall: 1 2 3 4 5

Anton van Beek: This single-disc Blu-ray comes packed with extras, two of which have been specially created for this new release. The first of these, *Not the Usual Mindless Boring Getting to Know You Chat* is a 43min retrospective featuring interviews with John Travolta, Samuel L Jackson, Tim Roth, Amanda Plummer, Eric Stolz and Rosanna Arquette (the absence of Tarantino himself, plus Uma Thurman and Bruce Willis is a touch disappointing). The second, *Critics Corner: Here Are Some Facts on the Fiction*, runs for 21mins and gives five US film critics the chance to share their thoughts on the film. Both are in 1080i.

Items ported over from previous DVD editions of the film include: a 30min *Making of...*, five deleted scenes, two behind-the-scenes montages, a production design featurette, a segment from *Siskel & Ebert at the Movies*, a clip from the Independent Spirit Awards and Tarantino's Palme D'Or acceptance speech. ➤

Download Central

Chris Jenkins asks whether Microsoft's Xbox 360 games console could actually be the gateway to video-on-demand



Microsoft has announced what it calls 'a new era in television' beginning this Christmas. But using the Xbox 360 console as a media platform isn't especially new. In the UK, the Xbox LIVE service has provided access to downloadable games, movies and TV channels including BBC, Channel 4, Channel 5 and LOVEFiLM for some time, but now Microsoft's strategy is to position the Xbox 360 as very much a multimedia platform, not just a games console.

The strategy runs across 20 countries, and means that services such as Bravo, Comcast, HBO GO, Verizon FiOS and Syfy in the U.S.; Telefónica in Spain; Rogers On Demand in Canada; Televisa in Mexico; ZDF in Germany; MediaSet in Italy and Blinkbox in the UK will be available via the console.

A total of 50 TV and entertainment partners have joined Xbox 360 and Xbox LIVE, which currently has 35 million members worldwide. **Consumption of video via Xbox LIVE has grown by three times in the last year to 2.1 billion hours a month.**

Part of Microsoft's strategy is to integrate its Kinect motion sensor device and Bing voice search services with the entertainment platforms.

Nearly a year ago, AT&T U-verse became the first TV provider to launch live TV on Xbox 360 in the USA. Now the channel is planning to integrate voice and gesture control to manage the TV experience. Other providers are expected to follow.

Using voice search with Bing on Xbox, you would say, for instance, 'Xbox, Bing, 'The Office'', and Xbox would find the



programme you're looking for. There will also be easier ways to share recommendations, games and music with friends.

In the UK, the addition of Blinkbox to Xbox LIVE later this year will give subscribers access to a library of 10,000 movie and TV titles. Blinkbox also plans to use Kinect and Bing Voice interactivity features on the Xbox platform.

Blinkbox is already available on PC, Mac, PS3, tablet devices and both LG and Samsung internet connected TVs, and claims to have a customer base of 3 million. Launched in 2008, by 2011 it had a majority stake bought by Tesco (well, every little helps). Perhaps with that sort of backing it will be Microsoft's Xbox, and not Smart TV, that will sneak video-on-demand into most homes through the back door.

Cave of Forgotten Dreams 3D

Revolver → All-region BD → £25 Approx



Werner Herzog has created a compelling argument for 3D filmmaking with his doc about cave paintings. The breathtaking exploration of the Chauvet Cave in France is viewable in both AVC 1.78:1 1080p 2D and MVC 1.78:1 1080p 3D on this Blu-ray. The film is better served by the latter, which brings the depths of the caves and

the shape of the rock walls into your front room. The DTS-HD MA 5.1 and LPCM 2.0 mixes cope easily with both the narration and music, delivering beautiful harmonics and tonal range. Extras include a 43min Q&A with Herzog and the trailer. **AvB**

1 2 3 4 5

Sons of Anarchy: Season Three

20th Century Fox → Region A/B BD → £30 Approx



After two seasons of blood and bikes in the small US town of Charming, this latest batch of 13 episodes shakes things up as the SAMCRO motorcycle gang heads across to Ireland in search of a missing family member, while club matriarch Gemma remains on the run and wanted for murder. Truth be told, it's not the

show's strongest year, but it all comes to a head in the most satisfying season finale yet. This three-disc set serves up impressive AVC 1.78:1 1080p encodes and aggressive DTS-HD MA 5.1 audio. Extras include a trio of commentaries and more. **AvB**

1 2 3 4 5

Star Wars: The Clone Wars Season 3

Warner Home Video → All-region BD → £35 Approx



The animated *Star Wars* spin-off shows no signs of slowing down with this hugely enjoyable new batch of 22 episodes. Highlights include an appearance by a certain Wookiee and some unexpected trouble for the Sith as Count Dooku and Asaji Ventress turn on one another, with Darth Maul's brother thrown into the mix

as well! This three-disc Blu-ray set gets an AV upgrade with lossless DTS-HD MA 5.1 audio joining the fun (at last). Despite minor banding, the AVC 1.78:1 1080p encodes remain as eye-poppingly gorgeous as ever. **AvB**

1 2 3 4 5

Doctor Who: The Complete Series 6

2entertain → Region B BD → £70 Approx



This latest outing serves up seven great episodes – including Neil Gaiman's sublime *The Doctor's Wife*, possibly the best episode in the history of 'New Who'. As for this rather pricey six-disc Blu-ray boxset, the native 1080i50 encodes (VC-1 for the Xmas Special, AVC thereafter) all look gorgeous and the DTS-HD HR 5.1

audio does a fine job of making the artificial worlds seem bigger than the sets they really are. Extras include: five episode commentaries, 13 cut-down *Confidentials*, five new shorts and two trailers. **AvB**

1 2 3 4 5



Awesome Orson lives on

Justice is done to Welles' 1958 film noir with reconstructed HD version

→ Touch of Evil: Limited Edition

Orson Welles' final foray as a Hollywood director is known as much for the chaos surrounding its release as for the story it tells. A hot, sordid slice of film noir set on the Mexican border and starring Charlton Heston, Janet Leigh and Welles himself, *Touch of Evil* was famously re-cut by Universal before its release in 1958.

While we can never hope to see Welles' true vision of the film, this marvellous two-disc Blu-ray includes Universal's initial 109min Preview re-edit of the film that supposedly appalled test audiences, the subsequent re-cut 95min version that was released to cinemas and – best of all – the completely overhauled 110min 1998 reconstruction of the film following Welles' extensive notes on his vision for the film.

Chris Jenkins: According to an essay in the accompanying booklet 'the film has been projected in cinemas in the 1.85:1, 1.37:1 (open matte) and even 1.66:1 ratios', with experts spilt over which was Welles' preferred version. This Blu-ray allows you to choose for yourself with 1/37:1 versions of the 95min and 110min versions, alongside 1.85:1 presentations of all three cuts.

It's hard to imagine the film has ever looked better. The 1998 Reconstruction has clearly had the most work done on its, resulting in pristine greyscale tones, excellent contrast levels, a natural layer of grain throughout and surprisingly good detailing at times (such as the lace decorating the

top of Janet Leigh's underwear during the close-up of her on the phone in Chapter 11). Print damage is no more than small flecks of dirt and sparkles.

The other two versions of the film look pretty comparable with one another. For the most part they exhibit more obvious print damage (tram marks), but a handful of shots look a little sharper than in the 1998 version in places. There are also slight framing variations across the three versions.

Mark Craven: The DTS-HD MA 2.0 soundtracks accompanying the five presentations of the film all sound comparable. Improvements in richness, tonality and range over previous releases are evident from the start. Background hiss and distortion is all but absent. Dialogue and music are crisp and precise. It's hard to think what more could you ask from a film of this vintage.

Anton van Beek: The biggest 'extra feature' on this two-disc set is the inclusion of five different presentations of the film itself. And Eureka has still found time to include some other treats for cinephiles. Re-edit producer, Rick Schmidlin, provides a solo chat track for the 1.85:1 1998 Reconstruction, while he's joined on a track for the 1.33:1 presentation of the same by Janet Leigh and Charlton Heston. Both versions of the 1958 Theatrical release offer the same commentary by filmmaker and author FX Feeney, while the 1958 Preview cut serves up a chat track with Orson Welles experts James Naremore and Jonathan Rosenbaum. Also included are a pair of documentaries, the trailer and booklet.



HCC VERDICT

Touch of Evil: Limited Edition
Eureka Masters of Cinema →
Region B BD → £25 Approx

We say: Another must-have addition to Eureka's Masters of Cinema Blu-ray lineup

Picture: **1 2 3 4 5**

Sound: **1 2 3 4 5**

Extras: **1 2 3 4 5**

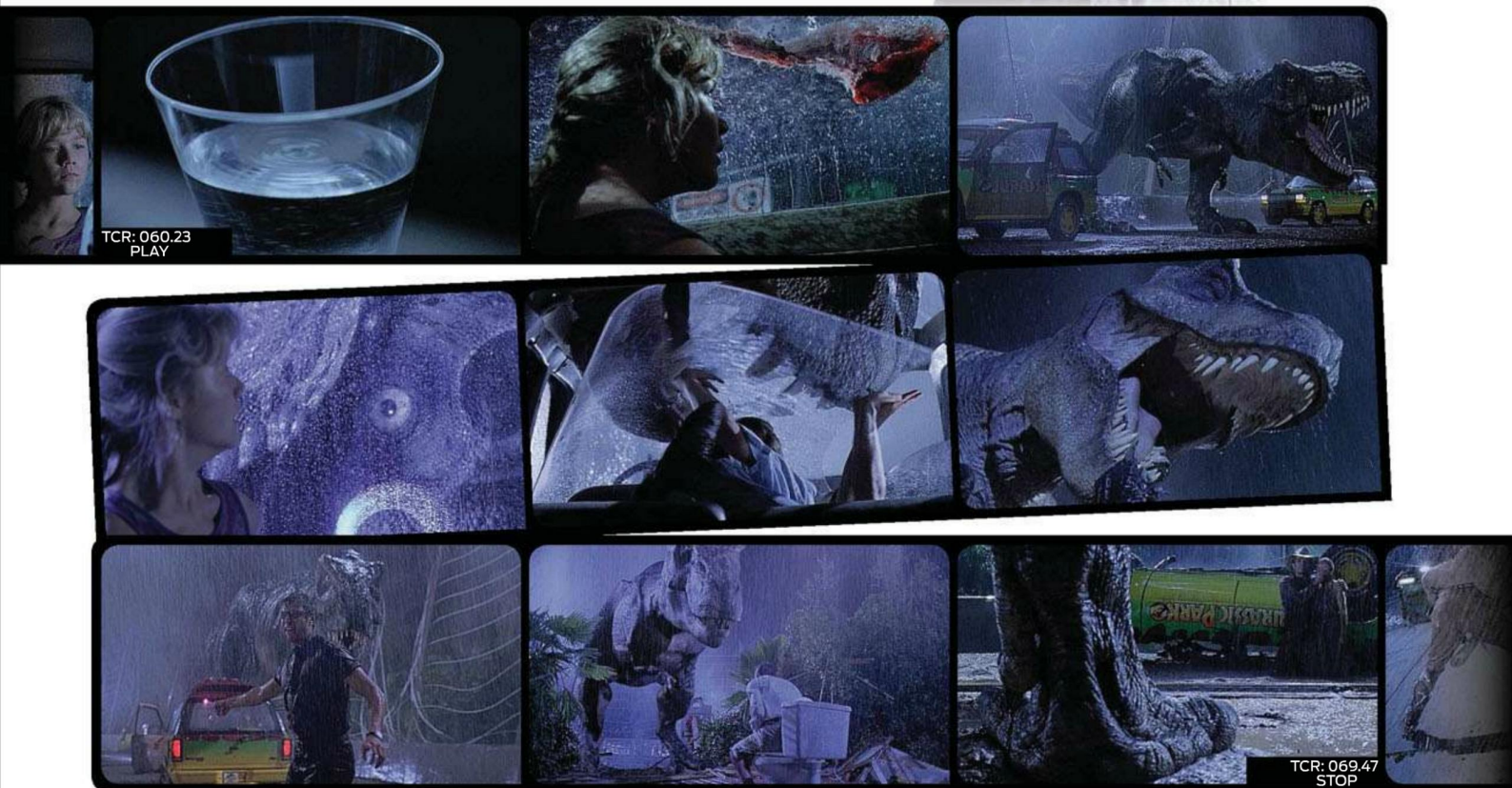
Movie: **1 2 3 4 5**

Overall: **1 2 3 4 5**



Demo screen

Unleash the monster in your home cinema system with the Blu-ray release of **Jurassic Park**



Jurassic Park

Universal Pictures → All-Region BD Ultimate Trilogy → £50 Approx

Time code: 060.23 - 069.47

The power has gone out in Jurassic Park. The two automated cars have come to a stop, stranding the five passengers next to the Tyrannosaurus Rex enclosure. Heavy rain pelts the roof of the cars and thunder rolls overhead as a storm blows in from the sea. All of it is brought convincingly to life in your home cinema thanks to this Blu-ray release's new DTS-HD Master Audio 7.1 soundtrack.

And then it happens. A subtle rumble of bass emerges from your subwoofer. A moment later there's another, slightly louder. The image on your screen cuts to a glass of water standing on the dashboard of one of the cars. With each subsequent

bass hit, concentric circles ripple out across the surface of the water. Something very big, and very dangerous is on the way.

Feel the funk

With its mix of spectacular visual effects and astonishing sound design, *Jurassic Park's* T-Rex attack has long been the demo sequence of choice for a large number of home cinema enthusiasts. And a large part of its appeal comes from the part of the sequence mentioned above – one that manages to take the film's LFE channel (an audio element you both hear and feel) and transform it into something that also has a genuine visual impact.

And astonishingly, we have Earth, Wind & Fire to thank for it. Not that Spielberg actually called in the funk band to suggest ideas for the film. Instead, the concept of visualising the impact tremors caused by the T-Rex came to the filmmaker when he was driving around listening to the band and noticed how the bass made his rearview mirror shake.

After a lengthy period of testing, a similar effect was achieved in the glass of water in the film by plucking a guitar string attached to the bottom of the glass.

So begins nine minutes of incredibly cinematic HD visuals and 7.1 audio that truly feels 65 million years in the making ●

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Feedback

Got an axe to grind? Want to comment on current technology? Need to share? **HCC** is here to help

3D not for me

I was recently looking for a new TV and the salesman showed me the benefits of 3D, which I did not get. Correct me if I'm wrong, but 3D is really just a series of two-dimensional images which build up depth to give the illusion of a three-dimensional image. Aren't holograms true three-dimensional images and without silly glasses?

Until I can see TIE Fighters and X-Wings flying over my shoulder – a kind of holographic surround vision – I will stick with a 2D 42in LED.

David Green,
via email

Sony has demo'd a holographic display, but it's not exactly what you would call a televisual experience. We fear your dream of whizzing TIE-Fighters is a long way off.

3D – not for me, either

I saw some 3D demo material at a cinema yesterday. Probably not representative of a 'proper' 3D movie as I guess its aim was to show off the effect. The first five minutes were impressive, after 10 minutes it was getting on my nerves and at the end of 15 minutes I was glad it was over due to an uncomfortable feeling with my vision.



3DTV: It's been exciting AV fans for a couple of years now, but is it really 3D? Some of you don't think so

Star
Letter



10 reasons NOT to switch to TiVo!

Following the rave reviews by you (and others) and the well-pitched ad campaign for the new Virgin Media TiVo box, ('10 Reasons to Switch' etc.) I took the plunge last month and went for the full 1TB package with everything on it, including all the available Sky channels and HD options. Apart from the lure of all the extra functionality, it felt good to be able to opt out of the Sky stranglehold on subscription TV, while retaining a decent choice of channels. In short, I've not anticipated the arrival of a new piece of AV kit with quite as much excitement since the launch of the original Sky+ PVR in 2001.

Sadly, my disappointment has been proportionally great. I rapidly got to know the (always helpful, polite and speedy) Virgin support and

helpline teams, but we invariably ended up at the same place – 'No, the box/software can't do that' – and I've ended up handing the new box back and cancelling my contract.

I was dying for the TiVo box to blow my socks off. In particular, since all broadcasters now put out all their best shows at the same time (the 9.00pm watershed), the ability to record three channels simultaneously was a dream.

Also, you guys at HCC are very privileged – from your coverage, it's apparent that Virgin provides you (and you alone) with special boxes that never 'freeze' or tell you a 'recording has failed' for no accountable reason. The rest of us are resigned to spending at least four times a year on our knees, groping around the back to pull out the power

lead and reboot the thing, or looking out of the window as the weather worsens and the signal goes just before one was hoping to record a favourite programme.

TiVo could and should be a credible – no, superior – option. But do the guys who have sorted its operating systems and menus actually use these things at home?

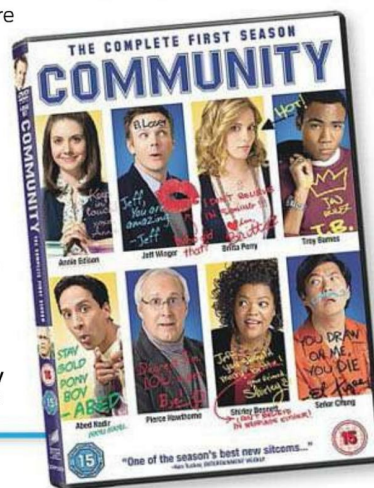
Please, HCC, use your influence to keep the pressure on our service providers to make their products work as well as they could.
Julian Burn-Callendar,
via email

At HCC we have exactly the same TiVo/Sky/Freeview boxes as everyone else, so even we experience the occasional freeze.

Anyway, looking back at our Virgin Media TiVo review (HCC #195), we fell short of

telling Sky subscribers to jump ship – rather that those who weren't already Virgin Media subscribers should give its TiVo-powered PVR some serious thought.

Your full letter outlines your frustrations in some detail, and we've sent a similarly detailed response. In short, though, we feel that coming at the TiVo box after being a Sky subscriber has



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I recently also took a short look at the LG passive 3D sets. Again, initially impressive but after a few minutes I'd had enough of the experience and the glasses.

Whatever the display technology or method I don't think I will ever really want to watch 3D until stereographers reign in the ridiculous eye-pulling effects and let you just immerse yourself in the movie.

Anonymous, via the website

Perhaps we should just agree that 3D is like Marmite...

prejudiced your views somewhat – for instance, you criticise the PVR for not being intuitive for a Sky user. The same point could probably be made the other way around!

However, many of your niggles (Parental PIN control, manually padding recordings) will probably be familiar to other TiVo users.

We've also forwarded your full letter to Virgin Media – so hopefully it will help the company improve its product.

Winner: Star Letter-writer Julian Burn-Callendar wins a copy of *Community: The Complete First Season* DVD boxset, courtesy of our community-minded pals Sony Pictures Home Entertainment. It's available to buy now, priced at £23 approx.

5.1 from the BBC

I am about to buy a Home Cinema system, and reading up on-line I find a lot of talk in 2010 about BBC HD broadcasting in AAC and that almost no AV's on the market have AAC decoders.

I can't find any updated discussions. What equipment do I need to be able to have 5.1 sound from HDTV broadcasts when surround sound is broadcast please?

Michael Sims, via email

This is indeed true, although the situation needs clarification. Terrestrial HD broadcasting – Freeview HD, here in the UK – employs AAC soundtracks, in order to keep bitrates as low as possible. This isn't the case with satellite HD broadcasting, which has a lot more capacity at its disposal. Here, you'll find a combination of Dolby Digital for the main soundtrack (either stereo or 5.1, depending on the content) and MPEG-1, Layer 2 for audio descriptions. This is why SkyHD subscribers and Freesat users have been able to enjoy multichannel surround sound with their existing audio equipment via a digital audio connection. However, as you point out, support for the AAC audio codec is rare in AV equipment. Were you to feed the 'raw' digital audio bitstream into an AVR, no usable results would be obtained. We spoke to Onkyo, who told us that its 'AVRs do not currently support AAC multichannel-decoding in UK or Europe. However, Onkyo AVRs for the Japanese market do decode the AAC bitstream format, because that – rather than Dolby Digital – is the

standard multichannel format there'. The Onkyo spokesman added that 'if AAC becomes more popular in the UK and Europe, Onkyo will happily support it but – right now, as far as we are aware – it is supported by a fairly limited range of media'. That's not to say you cannot get such audio from Freeview HD, though. All such boxes should 'transcode' them into another more compatible format (such as Dolby Digital, in the case of the Humax HDR-FOX-T2 PVR). This is available via HDMI, or the coaxial/optical digital audio outputs. The required 'digital audio output' setting can be found in the relevant menu of the set-top box.

Netflix, nah

Regarding the recent Friday Poll on the HCC website, I'm slightly worried that the arrival of Netflix is going to push people towards poor quality streams and away from Blu-Ray, which is the only truly great format for home viewing. I believe Netflix will still offer discs, but will put the emphasis on streaming. Until I can get 1080p with flawless encoding and 5.1 DTS-HD Master Audio streamed I'm sticking with physical formats.

Anonymous, via email

Netflix, nah (2)

It seems many people still prefer to own physical versions of movies, games, and to a certain extent music.

There is always that worry with 'cloud'-based and similar systems that your content may be withdrawn, or for the paranoid, edited to suit the current ways of thinking or even the whim of a director to change the work after release (are you listening George Lucas?)

Having also seen how unreliable other on-demand services can be I'll sticking with Blu-ray, CDs and DVDs myself for as long as they still make them.

Anonymous, via email

Well, it certainly seems that home cinema enthusiasts won't be falling over themselves to sign up to Netflix when it launches in

the UK – despite if offering 1080p streams and lossy 5.1.

We agree that physical formats are the purists' choice – and thankfully the movie studios aren't in any rush to do away with them. So long as we keep buying them, they'll keep making them.

Exercise caution

Whilst new formats such as Blu-ray and 3D marked real progress in home cinema technology, they required consumers to invest in new hardware to get any benefit. This made me somewhat cautious about upgrading my system, wondering if perhaps another new format was ready to launch. But that concern has been put to rest by the recent IFA and CEDIA shows and the demo of Sharp's Super Hi-Vision with resolution of 7,680 x 4,320. This format was last lauded in the March 2009 issue of HCC and we were told then that public broadcasts would start in time for the 2016 Olympics. Two years later, it seems that testing won't start until 2020. Having already slipped four years and needing 3.5 Terabytes for a 15-minute demo plus 22.2 channels for audio, I think this format is still some way off. The good news is this means I can now look forward to upgrading my system confident that something better isn't just around the corner.

Jon Mitchell (again), Twickenham

The presence of Sharp's 8K panel certainly sticks out like a sore thumb, and it's definitely a case of 'look what we can do' rather than 'look what we are about to do'. However, would you consider upgrading to a 4K panel? At least one (from Toshiba) should be hitting the shops in the coming months, and more will surely follow as the glasses-free 3D movement advances (see page 16). The price won't be cheap, though...

Write to Letters, HCC, AV Tech Media Ltd, Hadlow House, 9 High Street, Green Street Green, Orpington BR6 6BG or email us at hcc@futurenet.co.uk. Due to the volume of letters we receive we cannot guarantee to print/answer them all.

How we test

Home Cinema Choice's hardware reviews combine the subjective opinion of our seasoned reviewers with hard technical data.

Chris Jenkins explains how the *HCC* Tech Labs work

HCC hardware reviews combine the opinions of our experienced reviewers with objective technical data from our test lab. Here's how we do it...

HCC's gear reviews have a long tradition of combining the subjective opinions of experienced reviewers with hard scientific data from our test labs. That way, you can be sure that there's no danger of favouritism or prejudice creeping into the reviews – when we combine the reviewer's opinions with the test data, we can be sure that the results we present to you, the readers, are honest, reliable and accurate.

For over 20 years, we have been developing testing methods for every AV technology from CRT TV and VCRs to the latest 3D flatscreens, multichannel amplifiers and media players. Our testers have been trained by the ISF, Tektronix, Home Acoustic Alliance and other industry bodies, and we use industry-standard testing equipment so we can be confident our results make sense in terms of manufacturers' claims.

Our Tech Labs set-up consists of two main facilities.

The Viewing Room

Used mainly for testing TVs, projectors and speakers, the Viewing Room is designed to reproduce the conditions found in a typical mid-range home cinema installation. Created by award-winning custom installers Pounds (www.poundstv.co.uk), it's completely light-proofed for testing of TVs and projectors, is partially soundproofed using Acoustiblok (www.acoustiblok.com), and has been acoustically treated and tuned using custom absorbers and diffusers by the experts at RPG (www.rpg-europe.co.uk).

The room has a resident Crystal Acoustics TX-T2 7.2 speaker system, Onkyo TX-NR5008 receiver and a

Screen Research 100in projection screen. TVs, projectors and other AVRs are moved in as needed for testing. We use a TV stand from Gecko (www.gecko-furniture.co.uk) for mounting flatscreens. A Philips 46PFL9705H TV is used for 3D movie and games playback. The room is fully cabled with speaker, HDMI, and interconnects from Peerless. XLR cables are from Atlas cables. Multiple displays can be fed from the same source using a Gefen 2-in-4-out HDMI switcher/splitter.

The testing equipment used for TVs and projectors is the Chroma5Pro meter and ChromaPure Pro software supplied by Kalibrate Ltd (www.kalibrate.co.uk).

This sophisticated tristimulus colorimeter and analysis software allows us to measure functions such as contrast ratio, colour temperature and luminance, all essentials in picture performance.

The Test Lab

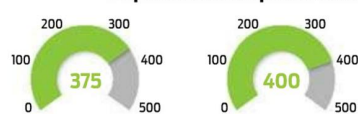
Mainly used for performance analysis of amplifiers and players, the Test Lab is equipped with an Audio Precision APX585 multichannel analyser. This generates programmable test signals, and runs a huge range of tests of functions such as output power, frequency response and distortion. It also has digital audio test functions. A Tektronix VM700 is used for analysis of analogue video signals.

Cables for the test system are again from Peerless.

In addition to the main test units, we use a number of audio and video signal generators from Sencore and Snell & Wilcox, analogue test equipment such as a oscilloscope, mains power meters from Maplin, a library of test and measurement DVDs and Blu-rays (plus all the newest software releases), and standardised digital files for media players.

Tech Lab tests explained

TV power consumption: Watts



White screen: This is a measurement of a display's power consumption in Watts when displaying a pure white 100IRE signal with muted audio

Test footage: Here the power consumption is measured with a looped test sequence of live footage (complete with explosions!) and the audio volume up

TV contrast: ratio



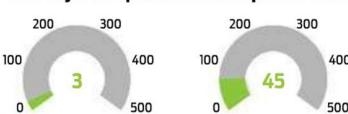
Picture: Contrast ratio claims by TV manufacturers are often extravagant, and don't follow an established standard. Our real-world measurements cut through the hype and allow one brand's contrast to be compared with another in a consistent way

Colour temp: Kelvin



Presets: Most TVs default to a picture setting, which is too bright and 'hot' (blue), in order to make them look good in shops, but also have a choice of colour temperature presets. We tell you which of these gets closest to the industry standard setting of 6,500K (D65)

Blu-ray/DVD power consumption: Watts



Idling: By EU regulation, standby power consumption for most devices is now under 1W, so we don't usually measure this; but the consumption when power is on can be considerably higher, so we measure this for DVD and Blu-ray players and some other devices

Playing: When a disc is spinning, the device's power consumption usually rises, so we measure when playing a standard disc. In theory, media players should display no change in consumption when playing

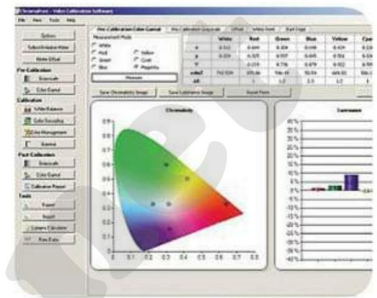
Audio Jitter: Ps



Sound: The analogue audio jitter from a device such as a Blu-ray player is measured in picoseconds. The lower the number, the better. Though analogue audio output is perhaps rarely used, jitter is often a good indicator of the general build and component quality of many devices



Test bench: The Viewing Room (above) simulates a typical home cinema, while the MSI laptop runs test software for the APX585 analyser (right) and ChromaPure system (above right)



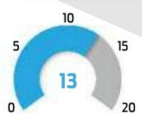
For testing of media software and portable testing applications, we use an MSI GT640 laptop PC with HDMI output and SRS sound.

Results

All this testing generates a huge amount of data, which is fed into product reviews and stored on our database. From this we can establish performance averages which

help us to keep our scoring realistic. Of course, this mass of information is too unwieldy and detailed to publish in the magazine unedited, so our next job is to present it in a way which is meaningful and easy to understand. Our graphical presentations (see below) should make it all more digestible. So, while one key reviewer is normally by-lined for our tests, the whole team will have been involved in bringing you results you can rely on

Video Jitter: Ns



Vision: Again, the analogue video jitter of a DVD or BD player may be less relevant when the digital output is normally used, but it is a good indicator of general build and component quality. We also measure other video quality indicators such as chroma crosstalk and frequency response at 5.8MHz

Loading: Boot/Java

Boot speed & tray eject
15s
Tray in to main BD menu
45s

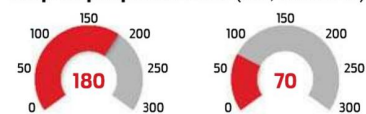
Disc loading & Java: Blu-ray disc players can be annoyingly slow to load and play discs, thanks mainly to the DRM and Java content. We measure times from power on to tray opening, and tray in to boot menu on a standard BD disc

AVR power: Watts



Powered: Power consumption of an AV amp can be high, but it's a requirement of decent output levels. We measure consumption in two states, when idle, and when loaded with a multichannel surround system

Amp output power: Watts (8Ω, 0.5% THD)

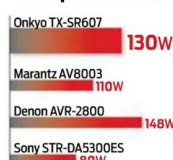


2-channel 8Ω: Manufacturers' claims for amplifier output power can be wildly exaggerated, and testing standards vary widely. Our tests deliver a figure for stereo performance with an 8Ω load, and quote a Total Harmonic Distortion result

5-channel 8Ω:

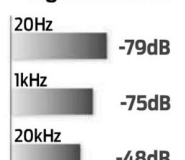
In most cases, multichannel performance will not match up to the two-channel figure. We push the products to its limit in multi-channel mode and quote the figure reached before unacceptable distortion results

Pure power: Watts



Fidelity firewall: This is our way of measuring an amp's output power ability before it is tainted by distortion. We measure at 1KHz with an 8Ω load to 0.05% THD to get an indication both of output power and component quality

Signal/noise: dB



S/N tests: These amp measurements reveal the ratio of signal to noise at a specific frequency. Low, mid and high readings are taken to determine the imaging and sonic character of the amp

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SELECT

→ **Buying Guide** Looking to purchase a new TV, AVR, speaker set, PJ, media player, BD deck, or surround sound system? Our Buying Guide is here to help. It's updated every issue with the latest reviews, and highlights the major specs so you can see at a glance what kit is right for you. And remember that the prices listed are the original RRP's – shop around and you'll often find them for less!



HCC Ratings key

Officially awesome	1 2 3 4 5
Essential purchase	1 2 3 4 5
Does the job	1 2 3 4 5
Disappointing	1 2 3 4 5
Don't touch it	1 2 3 4 5

TV screens



Manufacturer	Model	Price	Size (inches)	3D type	Panel type	HDMI	Component	PC	Networking	Internet TV	Wi-fi ready	Freeview HD	Freesat HD	Issue	Rating	Comment
LG	50PZ950T	£1,600	50	A	PDP	4	1	1	+	+	+	+	+	196	12345	Excellent all rounder, minor judder
LG	47LW550T	£1,200	47	P	LED	4	1	1	+	+	+	+	+	194	12345	Web browser is multimedia icing
LG	50PX990	£1,600	50	A	PDP	4	1	1	+	+	+	+	+	192	12345	Adds 3D to the 50PK990
LG	42LV450U	£530	42	-	LED	3	1	1	-	-	-	-	-	200	12345	Lacks Freeview HD and net features
Loewe	Individual 40	£5,500	40	-	LED	3	1	1	+	-	-	+	-	192	12345	Exquisite design and performance
Panasonic	TX-P55VT30	£2,700	55	A	PDP	4	1	1	+	+	+	+	+	197	12345	Sublime plasma is best-in-class
Panasonic	TX-L37DT30	£950	37	A	LED	4	1	1	+	+	+	+	+	196	12345	Do-it-all 3D capable thin screen
Panasonic	TX-L42E3B	£600	42	-	LED	3	1	1	-	-	-	+	-	200	12345	No frills 42in LED seems expensive
Panasonic	TX-P50GT30	£1,800	50	A	PDP	4	1	1	+	+	+	+	+	195	12345	Stunning 2D and 3D mid-ranger
Panasonic	TX-P42VT20	£1,800	42	A	PDP	4	1	1	+	+	+	+	+	190	12345	Wireless networking as it should be
Panasonic	TX-P42ST30	£1,200	42	A	PDP	4	1	1	+	+	+	+	-	198	12345	Entry-level 3D plasma
Philips	40PFL8605	£1,300	40	A	LED	4	1	1	+	+	+	-	-	192	12345	Accomplished 2D pics. Poor X-talk
Philips	Cinema 21:9	£4,000	58	A	LED	4	1	1	+	+	+	-	-	190	12345	Faultless movie viewing
Samsung	UE40D6530	£1,100	40	A	LED	4	1	1	+	+	+	+	-	198	12345	Brilliant pictures and Smart skills
Samsung	UE40D7000	£1,400	40	A	LED	4	1	1	+	+	+	+	+	197	12345	Gorgeous TV, superb performance
Samsung	UE55D8000	£2,500	55	A	LED	4	1	1	+	+	+	+	+	196	12345	Minor 3D X-talk, otherwise stunning
Samsung	UE60D8000	£4,300	60	A	LED	4	1	1	+	+	+	+	+	200	12345	Big screen comes with a big price
Samsung	UE46C8000	£1,700	46	A	LED	4	1	1	+	+	-	+	-	192	12345	Black levels fail to spoil super pics
Samsung	UE40D5520	£600	40	-	LED	4	1	1	+	+	+	+	-	200	12345	Superb budget set is hard to fault
Samsung	PS50C6900	£1,300	50	A	PDP	4	1	1	+	+	+	+	-	191	12345	Great value for money, decent pics
Samsung	PS51D6900	£1,000	51	A	PDP	4	1	1	+	+	+	+	-	198	12345	Aggressively priced 3D bigscreen
Samsung	UE65C8000	£5,000	65	A	LED	4	1	1	+	+	+	+	-	190	12345	World's largest 3D LED screen
Sharp	LC-37LE320	£700	37	-	LED	3	1	1	-	-	-	-	-	194	12345	Tasty set suited to a second room
Sharp	LC-46LE831E	£1,300	46	A	LED	4	1	1	+	+	+	+	-	199	12345	Sharp's best LED screen ever
Sharp	LC-60LE925E	£3,500	60	A	LED	4	1	1	+	+	+	-	-	189	12345	Outstanding colours but bad X-talk
Sony	KDL-40CX523	£550	40	-	CCFL	4	1	1	+	+	+	+	-	200	12345	CCFL screen packs tons of features
Sony	KDL-40HX723	£1,300	40	A	LED	4	1	1	+	+	+	+	-	201	12345	Excellent bigscreen all-rounder
Sony	KDL-40EX524	£800	40	-	LED	4	1	1	+	+	+	+	-	197	12345	Great features, decent 2D-only pics
Sony	KDL-40NX713	£1,000	40	A	LED	4	1	1	+	+	+	+	-	193	12345	Needs optional transmitter for 3D
Toshiba	42RL853	£600	42	-	LED	4	1	1	+	+	+	+	-	199	12345	Affordable 42incher with few frills
Toshiba	42HL833	£500	42	-	LED	2	1	1	-	-	-	-	-	200	12345	Good HD pics but only two HDMI's
Toshiba	47VL863	£900	47	P	LED	4	1	1	+	+	+	+	-	201	12345	Suffers from limited contrast
Toshiba	46VL758	£1,500	46	-	LED	4	1	1	+	-	+	+	-	192	12345	Undone by inconsistent backlight
Toshiba	55WL768	£1,850	55	A	LED	4	1	1	+	+	+	+	-	191	12345	HD good, 3D bad. Basic online stuff

A= Active. P= Passive

TV SCREENS EXPLAINED...

PLASMA VS LCD. PLUS, 3D'S RIVAL SYSTEMS

The TV market is becoming increasingly dominated by LED-lit LCD screens that are much thinner than traditional cold cathode fluorescent lamp (CCFL) screens. For 42in and above, plasma display panels (PDPs) come into play. These generally offer superior black levels, better viewing angles and less 3D cross-talk, but less brightness.

Most 3D screens feature the Active system that uses expensive powered 3D specs to deliver full HD images to each eye. Passive 3D TVs have a filter over the screen and use non-powered specs with polarising filters. The glasses are cheap as chips, but the resolution of 3D is halved to 540 lines.

Editor's Choice...

SAMSUNG

55in → UE55D8000 → £2,500 Approx

Samsung's cost-no-object 9000 series launched in 2010 but still tops the brand's range – however, if you want Samsung's most technologically advanced screen then look no further than its 2011 8000 series. Stunning looks with pics to match.

Tested: Issue 196

For more info visit: www.samsung.co.uk



Blu-ray players



Manufacturer	Model	Price	BD Live storage	3D	Multi-channel analogue out	HDMI	USB	Online portal	Wi-fi ready	DVD-Audio/SACD	Issue	Rating	Comment
Arcam	FMJ-BDP100	£1,000	+	+	+	1	+	+	+	+	194	12343	Rock-solid build quality and pics to match
Cambridge Audio	Azur 650BD	£400	+	+	+	1	+	+	+	+	184	12343	Top-notch build pays dividends with 2D fodder
Cambridge Audio	Azur 751BD	£800	+	+	+	2	+	+	+	+	199	12343	Universal deck performs well, needs more 'net
Denon	DBP-1611UD	£400	+	+	+	1	+	+	+	+	194	12343	Awful GUI but 3D pics are as good as it gets
Denon	DBP-2012UD	£750	+	+	+	1	+	+	+	+	198	12343	High-performance player with battleship build
Denon	DVD-A1UD	£4,500	+	+	+	2	+	+	+	+	178	12343	Unsurpassed reference quality audio and pics
Denon	Cara	£2,000	+	+	+	4	+	+	+	+	185	12343	With built-in 5 x 75W digital amp
Dune	Smart BI	£240	+	+	+	1	+	+	+	+	198	12343	Advanced networking features will wow techies
LG	BX580	£150	+	+	+	1	+	+	+	+	189	12343	Reasonable BD pics, messy DVD upscaler
LG	BD570	£200	+	+	+	1	+	+	+	+	186	12343	Speedy loading and highly multi-media capable
LG	BD670	£170	+	+	+	1	+	+	+	+	199	12343	Smart BD player offers great value
Marantz	UD7006	£800	+	+	+	1	+	+	+	+	200	12343	Superior AV performance and tasty design
NAD	M56	£1,900	+	+	+	1	+	+	+	+	183	12343	Motion processing issues spoil the day
Onkyo	BD-SP808	£500	+	+	+	1	+	+	+	+	195	12343	Accomplished disc spinner. Slow disc loader
Oppo	BDP-95EU	£900	+	+	+	2	+	+	+	+	197	12343	Even better build and results than the BDP-93EU
Oppo	BDP-93EU	£500	+	+	+	2	+	+	+	+	195	12343	Awesomely good video and music performance
Oppo	BDP-83SE	£1,300	+	+	+	1	+	+	+	+	190	12343	Precision engineered analogue audio output
Panasonic	DMP-BD75	£110	+	+	+	1	+	+	+	+	196	12343	OK images, quick loader, underwhelming to use
Panasonic	DMP-BDT310	£260	+	+	+	2	+	+	+	+	194	12343	Terrific new GUI, refined sound and pictures
Panasonic	DMP-BDT300	£260	+	+	+	2	+	+	+	+	194	12343	Versatile, aging deck. Look out for discounts
Panasonic	BFT800EBK	£650	+	+	+	1	+	+	+	+	192	12343	Built-in soundbar and iPod dock. Great 3D pics
Philips	BDP7600	£200	+	+	+	1	+	+	+	+	198	12343	Feature-heavy deck with open web browser
Philips	BDP7500 MKII	£200	+	+	+	1	+	+	+	+	194	12343	Slickly designed with decent 2D and 3D images
Pioneer	BDP-LX53	£400	+	+	+	1	+	+	+	+	187	12343	Basic and slow to load but impressive BD pics
Samsung	BD-D7500	£250	+	+	+	1	+	+	+	+	198	12343	Style-centric wall-mountable 3D player
Samsung	BD-D6900	£300	+	+	+	1	+	+	+	+	195	12343	Decent BD deck with built-in Freeview HD tuner
Samsung	BD-C6900	£255	+	+	+	1	+	+	+	+	194	12343	Quick loader, versatile deck. Passable pictures
Sharp	BD-HP90S	£290	+	+	+	1	+	+	+	+	194	12343	Slot-loading vertical design, expensive
Sony	BDP-S380	£130	+	+	+	1	+	+	+	+	199	12343	Budget player misses out on 3D and networking
Sony	BDP-S480	£150	+	+	+	1	+	+	+	+	198	12343	Brilliant deck offers superior VOD at a low price
Sony	BDP-S570	£160	+	+	+	1	+	+	+	+	185	12343	Supreme quality deck; plenty of web content
Toshiba	BDX3100	£185	+	+	+	1	+	+	+	+	194	12343	Feature-light but does the job with solid pics
Toshiba	BDX3200	£150	+	+	+	1	+	+	+	+	197	12343	Unexciting player can't compete with rivals
Yamaha	BD-S667	£300	+	+	+	1	+	+	+	+	189	12343	Impressive but best partnered to a Yamaha AVR

BLU-RAY EXPLAINED...

MATCHING YOUR DECK TO YOUR AMP

Blu-ray decks are designed to deliver top-notch images (some do it much better than others of course) but Blu-ray is also about enjoying superior quality sound. When choosing a deck, bear in mind the connectivity and decoding features of your amplifier. If it's an older model that doesn't have HDMI inputs then you'll need a BD player with multichannel analogue audio outputs to enjoy hi-res surround sound formats. Most current AVRs have HDMI inputs that accept bitstreamed Dolby TrueHD and DTS-HD MA, but not all receivers can cope with 3D video signals, in which case you'll need a deck with dual HDMI outputs – one for the amp, one for the TV.

Editor's Choice...

PANASONIC
DMP-BDT310 → £260 Approx



This second-gen 3D deck improves on its BDT300 predecessor thanks to new tricks and a lower asking price. Standout features – alongside the excellent 2D and 3D playback – are Skype functionality, 2D-3D conversion, faster loading times and a revamped GUI that takes usability to the next level. Motion-sensitive controls bring even more to the party.

Tested: Issue 194
For more info visit: www.panasonic.co.uk

AV Receivers



NEW ENTRY

Manufacturer	Model	Price	Claimed power	THX	Multi-ch in	HDMI in	HDMI out	3D	Dolby True HD	DTS HD MA	Networking	Net tuner	Issue	Rating	Comment
Anthem	MRX 700	£2,100	7 x 120W	+	+	4	1	+	+	+	+	+	195	12343	Complex set-up, great EQ sound
Arcam	AVR400	£1,700	7 x 90W	+	+	5	1	+	+	+	+	+	194	12343	Beautifully built. Ace analogue audio
Denon	AVR-4311	£2,000	9 x 170W	+	+	6	2	+	+	+	+	+	193	12343	Polished audio, Airplay streaming
Denon	AVR-1611	£350	7 x 110W	+	+	4	1	+	+	+	+	+	191	12343	Uses binding posts. Decent sound
Denon	AVR-2311	£800	7 x 135W	+	+	6	1	+	+	+	+	+	190	12343	iPod dock but no networking
Marantz	SR7005	£1,400	7 x 125W	+	+	6	2	+	+	+	+	+	187	12343	Great home cinema amp
Marantz	NR1602	£550	7 x 50W	+	+	4	1	+	+	+	+	+	202	12343	Slimline AVR is forward-thinking
NAD	T 757	£1,500	7 x 60W	+	+	4	1	+	+	+	+	+	201	12343	Limited features, but superb sound
Onkyo	TX-NR609	£500	7 x 60W	+	+	6	1	+	+	+	+	+	195	12343	Comprehensive, stunning performer
Onkyo	TX-NR5008	£2,400	9 x 140W	+	+	8	2	+	+	+	+	+	191	12343	Versatile and capable of brilliance
Onkyo	TX-SR308	£250	5 x 100W	+	+	3	1	+	+	+	+	+	191	12343	Under specified and under powered
Pioneer	VSX-520	£300	5 x 130W	+	+	3	1	+	+	+	+	+	191	12343	Decent sound; spring-clip terminals
Pioneer	SC-LX83	£2,000	7 x 190W	+	+	3	1	+	+	+	+	+	186	12343	Punchy audio with superb control
Pioneer	VSX-920	£500	7 x 140W	+	+	4	1	+	+	+	+	+	185	12343	Cool iPod integration, lacks guts a bit
Pioneer	VSX-2021	£800	7 x 150W	+	+	7	2	+	+	+	+	+	200	12343	Class-leading control and RoomEQ
Yamaha	RXV-3067	£1,500	7 x 140W	+	+	8	2	+	+	+	+	+	194	12343	Superb and musical reproduction
Yamaha	RXV-367	£200	5 x 120W	+	+	4	1	+	+	+	+	+	191	12343	Budget spec and sound to match
Yamaha	RXV-471	£300	5 x 105W	+	+	4	1	+	+	+	+	+	199	12343	Brilliant sounding entry-level AVR
Yamaha	RXV-1067	£850	7 x 105W	+	+	8	2	+	+	+	+	+	190	12343	Optimised for cinema. Good connects

Systems



NEW ENTRY

Manufacturer	Model	Price	3D	Claimed power	Configuration	Dolby True HD	DTS HD MA	HDMI in/out	Component	Online portal	Wi-fi ready	Issue	Rating	Comment
Harman/Kardon	BDS800	£1,100	+	525W	5.1	+	+	0/1	+	+	+	194	12343	Nil by 1080p24. OK performance
LG	HB-965TZ	£600	+	1,100W	5.1	+	+	2/1	+	+	+	187	12343	Lovely flat speakers and excellent GUI
Panasonic	SC-BTT775	£400	+	1,000W	5.1	+	+	2/1	+	+	+	198	12343	A decent starter system for AV novices
Panasonic	SC-BTT350	£370	+	1,000W	5.1	+	+	0/1	+	+	+	190	12343	Sonics don't match the versatility
Panasonic	SC-BT320	£400	+	1,000W	5.1	+	+	1/1	+	+	+	187	12343	Pics are ok but a right pain to use
Panasonic	SC-BTT330	£350	+	1,000W	5.1	+	+	2/1	+	+	+	200	12343	Affordable surround sound, old net portal
Samsung	HT-D6750W	£800	+	1,300W	5.1	+	+	2/1	+	+	+	197	12343	Claims to be 7.1 but isn't
Samsung	HT-C9950W	£2,000	+	1,000W	7.1	+	+	2/1	+	+	+	190	12343	Perfect style match for Samsung's TVs
Samsung	HT-C6730	£600	+	1,330W	7.1	+	+	1/1	+	+	+	187	12343	Room-filling sonics; wireless rear speakers
Sony	BDV-E370	£500	+	850W	5.1	+	+	0/1	+	+	+	187	12343	Good sound at low volume; SACD playback
Sony	BDV-E880	£400	+	1,000W	5.1	+	+	2/1	+	+	+	201	12343	Full of features but average audio

Speakers



Manufacturer	Model	Price	Configuration	Front max power	Rear max power	Centre max power	Sub power	bookshelf	Issue	Rating	Comment
Acoustic Energy	Aegis Neo Max	£1,900	7.1	2 x 200W	2 x 170W	120W	200W	surr	199	12345	With 2 x 120W surrounds. An awful lot of speakers for the money
Acoustic Energy	Compact/Neo	£850	6.1	2 x 100W	2 x 100W	100W	200W	all	202	12345	6.1 system offers solid sonics
Artcoustic	Spitfire	£21,500	7.5	2 x 250W	2 x 250W	250W	250W	no	200	12345	Plus 2 x 150W surrounds. Wall-mountable speakers with might
Bowers & Wilkins	800 Diamond	£22,500	5.1	2 x 500W	2 x 120W	300W	1,000W	no	196	12345	Breathtaking sound, bonkers price
Cambridge Audio	Minx S325	£800	5.1	2 x 75W	2 x 75W	75W	300W	all	195	12345	Extraordinary power for dinky size
Canton	CD 105	£500	5.1	2 x 100W	2 x 100W	100W	100W	all	196	12345	Potent but suited to smaller areas
Canton	Vento 800	£6,650	5.1	2 x 140W	2 x 80W	85W	750W	rear	194	12345	Fab definition & fidelity
Eclipse	Time Domain	£16,500	5.1	2 x 70W	2 x 70W	70W	500W	no	189	12345	Gorgeous design and articulation
EMP Tek	Impression	£4,000	7.1	2 x 200W	2 x 200W	120W	100W	surr	193	12345	With 2 x 100W surrounds. Thrilling
Image Audio	IA 8/5/C	£4,000	5.0	2 x 150W	2 x 150W	300W	n/a	no	195	12345	Excellent flat panel speakers
Jamo	S426 HCS3	£560	5.1	2 x 100W	2 x 60W	90W	260W	rear	202	12345	Affordable floorstanding array
KEF	T-Series T205	£1,500	5.1	2 x 150W	2 x 100W	150W	250W	no	192	12345	Skinny and stylish. Immersive
Klipsch	HD Theatre	£500	5.1	2 x 100W	2 x 100W	100W	100W	all	192	12345	Horn tweeters are a tad rough
Magnat	Quantum 650	£1,700	5.1	2 x 350W	2 x 180W	180W	270W	rear	198	12345	Potent system at a good price
Monitor Audio	Apex	£2,425	5.1	2 x 100W	2 x 100W	200W	500W	rear	190	12345	Luxury styling and performance
Monitor Audio	Bronze BX	£1,350	5.1	2 x 120W	2 x 80W	120W	200W	rear	191	12345	Sub strains to keep up
Paradigm	MilleniaOne	£2,500	5.1	2 x 50W	2 x 50W	50W	300W	all	202	12345	Premium-priced sub/sat package
Pioneer	S71	£2,600	5.1	2 x 130W	2 x 130W	130W	280W	rear	194	12345	Immersive sound. Severe looking
PSB	Image Series	£1,500	5.1	2 x 200W	2 x 150W	150W	150W	rear	199	12345	Look great, sound tasty
PSB	Imagine Series	£3,000	5.1	2 x 200W	2 x 150W	150W	500W	rear	188	12345	Unexpected impact for the price
Scandyna	Micropod SE/ The Ball	£900	5.1	2 x 100W	2 x 100W	100W	60W	all	200	12345	Quirky design married to hi-tech drivers = slick style system
Tannoy	Definition	£8,200	5.0	2 x 400W	2 x 350W	350W	n/a	rear	197	12345	Worth every penny. Bring on the sub
Tannoy	Arena HL 300	£1,850	5.1	2 x 75W	2 x 75W	75W	300W	no	198	12345	High-end sub/sats with style
Teufel	Columa 100	£350	5.1	2 x 100W	2 x 100W	100W	100W	no	195	12345	Energetic floorstanders. Ace sub
Teufel	Theatre 200	£800	5.1	2 x 140W	2 x 150W	140W	250W	all	195	12345	Bold sats, sub suffers colouration
Quadral	Chromium 5.1	£2,700	5.1	not given	not given	not given	150W	rear	197	12345	Top quality drivers, nice cabinets
XTZ	99 Series	£2,200	5.1	2 x 550W	2 x 100W	100W	300W	no	193	12345	Big, tunable sound. Mail-order

NEW ENTRY

NEW ENTRY

NEW ENTRY

5.1 CLASSIC HOME CINEMA SPEAKER LAYOUT...

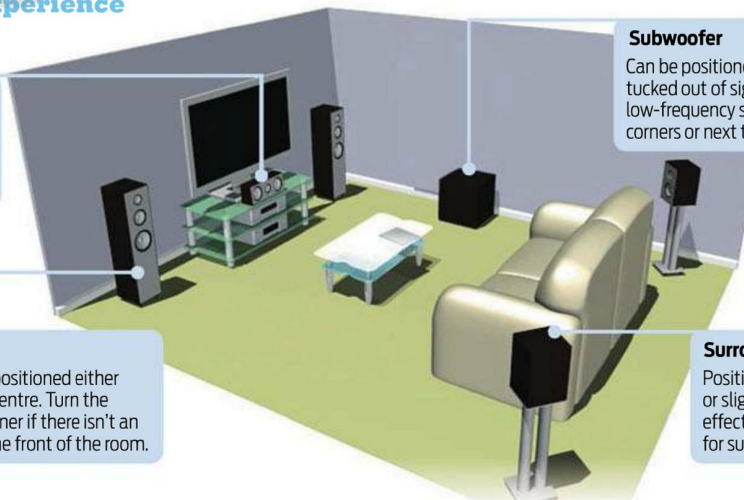
Follow these simple rules when laying out your system and you'll be guaranteed a great listening experience

Centre speaker

Handles most of the dialogue and onscreen effects. Should be positioned above or below the screen as close to it as possible.

Front speakers

Left and right speakers should be positioned either side of the screen, in line with the centre. Turn the speakers in slightly to face the listener if there isn't an even movement of sound across the front of the room.



Subwoofer

Can be positioned wherever it sounds best or can be tucked out of sight due to the non-directional nature of low-frequency signals. Be aware that close positioning in corners or next to walls can create a boomy effect.

Surround speakers

Position alongside the listener, pointing in or slightly behind the ears for a good surround effect. The back wall is not a good position for surrounds.

Projectors



Manufacturer	Model	Price (Original)	Type	Resolution	3D	HDMI	Component	12V trigger	Fan noise/dB	Lamp life/hr	Issue	Rating	Comment
BenQ	W1100	£900	DLP	1920 x 1080	+	2	1	1	22	2,500	197	12345	Dynamic images, noisy fan
BenQ	W1000+	£750	DLP	1920 x 1080	+	2	1	1	26	5,000	193	12345	Performance transcends price
Casio	XJ-A235	£1,000	DLP	1280 x 800	+	1	0	0	29	20,000	192	12345	LED/DLP hybrid. Poor pics
Epson	EH-TW3600	£1,300	LCD	1920 x 1080	+	2	1	1	22	4,000	193	12345	Bright pics but average black levels
InFocus	SP8600	£800	DLP	1920 x 1080	+	2	1	1	30	2,500	198	12345	Excellent sub-£1k projector
InFocus	SP8604	£2,500	DLP	1920 x 1080	+	3	1	2	28	3,000	196	12345	Versatile PJ with decent pictures
InFocus	SP8602	£3,000	DLP	1920 x 1080	+	2	3	3	28	2,500	182	12345	Good pics with minor operating flaws
JVC	DLA-X3	£3,600	D-ILA	1920 x 1080	+	2	1	1	20	3,000	193	12345	Aces 2D images, X-talk with 3D
JVC	DLA-X7	£5,550	D-ILA	1920 x 1080	+	2	1	1	20	3,000	195	12345	Brightness and black level to die for
JVC	DLA-HD990	£9,000	D-ILA	1920 x 1080	+	2	1	1	19	3,000	185	12345	Gorgeous with amazing black levels
Optoma	HD67N	£500	DLP	1280 x 720	+	1	2	0	29	3,000	194	12345	With so-so 3D using a 3D-XL adapter
Optoma	HD20	£900	DLP	1920 x 1080	+	1	2	0	29	4,000	176	12345	One of the first budget Full HD PJs
Panasonic	PT-AE4000	£2,500	LCD	1920 x 1080	+	2	1	1	22	2,000	177	12345	Filmic pictures and easy to setup
Runco	LS-5	£7,500	DLP	1920 x 1080	+	2	2	2	30	4,000	187	12345	3-chip performance from one chip
Sanyo	PLV-Z4000	£1,800	LCD	1920 x 1080	+	2	2	1	19	3,000	191	12345	Quiet. Yellow-ish but filmic images
Sharp	XV-Z17000	£4,000	DLP	1920 x 1080	+	2	1	0	n/a	n/a	196	12345	Living room friendly, 3D impresses
SIM2	MICO 40	£11,000	DLP	1920 x 1080	+	2	1	2	n/a	30,000	189	12345	Eco-friendly LED-lit and versatile
SIM2	C3X Lumis Uno	£19,000	DLP	1920 x 1080	+	2	1	3	32	2,500	184	12345	Supreme pics but lacks manual iris
SIM2	Lumis 3D-S	£30,000	DLP	1920 x 1080	+	2	1	3	n/a	3,000	199	12345	Reference level 3D projector
Sony	VPL-VW90ES	£5,400	SXRD	1920 x 1080	+	2	1	1	22	n/a	192	12345	Great option for a 3D CI build
Sony	VPL-VW85	£5,400	SXRD	1920 x 1080	+	2	1	1	20	3,000	174	12345	Elderly but impressive SXRD PJ
Sony	VPL-HW20	£2,400	SXRD	1920 x 1080	+	2	1	0	20	n/a	190	12345	Complex but capable of greatness
Sony	VPL-HW30ES	£3,100	SXRD	1920 x 1080	+	2	1	0	22	n/a	201	12345	Sony's most affordable 3D offering
ViewSonic	PRO8200	£900	DLP	1920 x 1080	+	2	1	1	27	3,000	192	12345	Falters with motion resolution
Vivitek	H9080FD	£10,000	DLP	1920 x 1080	+	2	1	1	n/a	4,000	173	12345	World's first 'lampless' LED projector
Vivitek	H1085	£1,000	DLP	1920 x 1080	+	2	1	1	26	4,000	179	12345	Affordable DLP PJ could be quieter
Vivitek	H5080	£2,700	DLP	1920 x 1080	+	3	1	2	27	2,000	186	12345	Excellent contrast and colour. Noisy

NEW ENTRY

PROJECTOR SCREENS EXPLAINED...

FIXED FRAME OR ROLL AWAY?

When buying a projector, it's important to think about what screen you're going to partner it with. There are two main approaches – fixed-frame, where the screen is placed in a rigid frame and attached permanently to the wall, or 'roll-away' where it can be rolled up when not in use, including via neat, motorised systems. For the best picture quality and dedicated cinema rooms, fixed frame is preferable, as permanent screens generally stay more tautly stretched and deliver the most accurate pictures. Roll-away screens are more suited to when the room needs to double as a living room. Pricing, of course, varies depending on what size you need.

Editor's Choice...

SONY

SXRD → VPL-VW90ES
→ £5,400 Approx

Sony's range-topping projector marries an exemplary 2D picture performance with one of the best active shutter 3D systems we've seen. And, aside from its video prowess, it features smart design, solid build and versatile installation options.

Tested: Issue 192

For more info visit: www.sony.co.uk/biz



Media Players



Manufacturer	Model	Price	Type	HDD	3D	HDMI	DLNA	Online portal	USB playback	Wi-fi ready	Issue	Rating	Comment
AC Ryan	PlayOn! HD Essential	£130	Player	1TB	+	1	+	+	+	+	194	12345	No wired Ethernet option, so you have to network via wi-fi dongle
Boxee	Boxee Box	£200	VOD	+	+	1	+	+	+	+	193	12345	iPlayer access. Browser is a pain to use
Buffalo	Linkstation Pro LS-VL	£170	NAS	1TB	+	+	+	+	+	+	192	12345	Speedy and reliable with Bit Torrent client. 1.5TB and 2TB versions are also available
Crystal Acoustics	PICOHD5.1	£50	Player	+	+	1	+	+	+	+	199	12345	Small, no frills media player
Digital Stream	DPS-1000	£90	VOD	+	+	1	+	+	+	+	196	12345	Good for VOD services, no optical out
Iomega	StorCenter IX2-200	£215	NAS	2TB	+	0	+	+	+	+	182	12345	Pocket-sized powerhouse with handy one-touch USB copy
Iomega	Screenplay MX	£140	Player	1TB	+	1	+	+	+	+	194	12345	No optical audio out or hi-res audio
Iomega	Screenplay MX TV Link Director's Edition	£90	Player	+	+	1	+	+	+	+	185	12345	This wallet-friendly player is well-specified, but the lack of a search function can make trawling content a pain
iXtreamer	iXtreamer	£150	NAS	+	+	1	+	+	+	+	199	12345	Slick player with space for SATA HDD
Netgear	NeoTV 550	£140	Player	+	+	1	+	+	+	+	199	12345	Solid offering but file support isn't comprehensive
Netgear	ReadyNAS NVX	£500	NAS	1TB	+	0	+	+	+	+	185	12345	Tank-like NAS can accommodate up to 8TB of storage – a serious bit of hardware
Popbox	Popbox 3D	£140	Player	+	+	1	+	+	+	+	199	12345	Offers BBC iPlayer and MKV3D file support
Sony	SMP-N100	£120	VOD	+	+	1	+	+	+	+	193	12345	Bravia Internet TV and streaming aplenty
Synology	USB Station 2	£85	Player	+	+	+	+	+	+	+	193	12345	Simply add your own USB hard disks
Synology	DS410	£400	Player	+	+	+	+	+	+	+	190	12345	Accommodates up to 8TB of SATA drives
Teufel	MediaStation 6	£270	Player	1TB	+	1	+	+	+	+	200	12345	Freeview HD totting player has hideous UI
Toshiba	Stor.E TV+	£170	Player	1TB	+	1	+	+	+	+	195	12345	Tosh's cute unit supports a wide range of formats
Verbatim	MediaShare	£130	NAS	1TB	+	1	+	+	+	+	188	12345	Stylish, well-featured NAS
WD	WD TV Live Hub	£200	Player	1TB	+	1	+	+	+	+	190	12345	Superb multi-format player
WD	WD TV Mini	£48	Player	+	+	0	+	+	+	+	189	12345	Tiny media player lacks HDMI output

HOME CINEMA Choice

→ In the next issue

HCC Movie Awards 2011 We reveal the discs you can't live without
How green is your AV system? And is it costing you the Earth to run?
Part III of our D.I.Y. home cinema build It's time to fire it up!

→ On test

TOSHIBA'S CEVO ENGINE TV The LED screen we've all been waiting for ONKYO TX-NR5009 Flagship 9.2-channel AV receiver SONY KDL-55HX823 55in Edge LED TV OPTOMA HD83 DLP 3D projector ROUNDUP Sub/sat speaker systems that won't break the bank PLUS: In-depth news, BD reviews and more

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HOME CINEMA Choice

Just ask!

Recorders



NEW ENTRY

NEW ENTRY

NEW ENTRY

NEW ENTRY

Manufacturer	Model	Price	Type	HDD/GB	HDMI	Component	Scart	USB Media	Online portal	Wi-fi ready	Issue	Rating	Comment
3View	3VHD	£300	F'view HD	500	1	0	1	+	+	-	193	12345	Good recorder, scant internet TV offering
Echostar	HDS-600RS	£350	F'sat HD	500	1	0	2	+	+	-	196	12345	Solid PVR with built-in SlingPlayer feature
Panasonic	DMR-BWT700	£500	F'view HD	320	1	0	2	+	+	+	197	12345	Complex with Blu-ray recorder and 3D player
Sagemcom	DTR67320T	£150	F'view	320	1	1	2	+	-	-	201	12345	No HD tuners, but can import/export media
Samsung	SMT-S7800	£280	F'sat HD	500	1	0	2	+	+	+	197	12345	Good recorder, scant internet TV offering
Samsung	BD-DT7800	£280	F'view HD	500	1	1	0	+	+	+	201	12345	Can't record two channels at once
Toshiba	HDR5010	£200	F'view HD	500	3	1	1	+	-	-	201	12345	Good twin-tuner offering, but no iPlayer yet
TVonics	DTR-Z500HD	£225	F'view HD	500	3	0	1	+	-	-	201	12345	Firmware has added BBC iPlayer
Virgin Media	TiVo	£200	Cable TV	1TB	1	0	1	-	+	-	195	12345	Awesome 3-tuner PVR. No BBC red button

Subwoofers



NEW ENTRY

Manufacturer	Model	Price	Sealed/ported	Power (RMS)	Frequency response/Hz	Driver size	Dimensions/ (w x h x d)mm	Weight/kg	Issue	Rating	Comment
BK Electronics	XXLS400DF	£410	S	400W	19-120	12in	400 x 460 x 400	28	196	12345	Clean and tight; great value
Bowers & Wilkins	DB1	£3,250	S	1,000W	17-45	12in x 2	460 x 490 x 410	44	197	12345	Bipolar arrangement, ripping
Paradigm	Seismic 110	£1,250	S	850W	18-150	10in	298 x 343 x 320	17	188	12345	AKA The Bulldog and has real bite
Paradigm	SUB1	£5,000	S	1,700W	35-150	8in x 6	505 x 516 x 455	50	197	12345	Unorthodox hexagonal shape
REL	T3	£430	S	150W	30-120	8in	300 x 343 x 356	13	186	12345	Amazing sound for compact size
SV Sound	PC 12 Plus DSP	£1,250	P	800W	10-150	12.5in	1,022 x 407	39	198	12345	Cylindrical sub for big spaces
Velodyne	CHT-15Q	£1,200	P	750W	23-120	15in	467 x 533 x 527	34	189	12345	Great handset and EQ set-up
Velodyne	DD18+	£5,800	S	1,250W	8.8-300	18in	530 x 580 x 650	65	197	12345	Huge 18in driver, muscular sound
Velodyne	SPL-800 Ultra	£1,150	S	1,200W	16-240	8in	267 x 280 x 356	33	201	12345	Compact but potent; nice finish

Soundbars



Manufacturer	Model	Price	Power	Separate sub	Sub power	HDMI in	HDMI out	Dolby True HD	DTS HD MA	Dimensions/ (w x h x d)mm	Weight/kg	Issue	Rating	Comment
Lenco	SB-100	£140	80W	-	N/A	0	0	-	-	540 x 110 x 165	1.4	199	12345	Budget, but '3D' effect is good
Orbitsound	T12	£300	80W	+	20W	0	0	-	-	605 x 100 x 110	2.8	186	12345	Offers integrated iPod dock
Panasonic	SC-HTB520	£300	120W	+	120W	1	1	-	-	1002 x 80 x 50	2.5	199	12345	HDMI but no TrueHD/DTS-HD
Samsung	HWC450	£250	160W	+	120W	0	0	-	-	957 x 92 x 46	2.3	182	12345	Affordable, has wireless sub
Teufel	Cinebar 50	£670	200W	+	150W	0	0	-	-	1010 x 130 x 100	8	182	12345	Punchy sound but not cheap
Yamaha	YSP-2200	£800	132W	+	100W	3	1	+	+	435 x 137 x 350	6	196	12345	Effective surround sound

GEAR GUIDE → DIRECTORY

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POINT OF VIEW

Richard Stevenson is a fossil-fuel guzzler, but when a five-figure electricity bill arrives he decides what he's going to switch off

Regular readers of this column may find it hard to believe that I have gone green. I mean I have heard of being environmentally friendly, I am aware of carbon footprints and CO₂ emissions, but I was never going to let any of that get in the way of my lifestyle. Previously, I made Jeremy Clarkson look like a tree-hugging hippie.

That was the old me. The new me reads energy labels, boils just enough water for a cup of coffee and shouts at the missus if she leaves a light on. Like most lifestyle changes, this was brought about by a single pivotal moment – the arrival of an electricity bill. This bill corrected a meter reading error that had been ongoing, unbeknown to everyone, since I moved into my house six years ago. It was a bill for £20,481!

Despite numerous meter readings a decimal point had ended up in the wrong place. For over half a decade, my bills convinced me that my electricity usage was reasonable and this had lead to something of a gung-ho attitude to energy efficiency. The reality was that the bills were only showing one-tenth of my actual consumption.

While a very fair Npower agreed to write off the accrued bill prior to 12 months ago, the pain hasn't stopped. The newly accurate meter readings mean my quarterly bills are about to increase by a factor of 10 to what looks like a substantial mortgage payment per month. Apparently my electricity consumption has been growing exponentially and in the last 12 months I have used close to 60MWh of juice. That is over 6kW of electricity every hour of every day, all year round. Surely there must be a mistake? No. A two-day electrical investigation took place at the Stevenson ranch, including buying an electricity monitor. Sure enough, I was using over 100kWh a day, and the extended Indian summer meant the heating hadn't even kicked in yet. Feck!

The home cinema system came under close scrutiny. Powered up and running, the BD player

uses about 100W, the processor 150W and the projector 350W. Given ASBO volumes the five stereo power amps draw 600W each and both subs suck another 500W a piece from the wall. Before I have even started the popcorn maker, that is close 5kWh at 16p/kWh. Not a big outlay for a two-hour film I grant you, but the system also draws over 1kWh powered-up and idling for the other 22hrs in an average day. I realised the system running cost is about £3 per day or in excess of £1,000 a year.

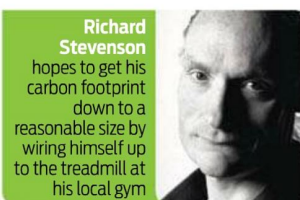
Mammoth footprint

That is a huge and ridiculously expensive outlay, even before I get lynched by environmentalists for having a carbon footprint the size of the Isle of Wight. I might also have to admit that installing electric underfloor heating in four rooms, having the hot tub at 38° all through the year and keeping my koi carp snug in their three outdoor fishponds suddenly seems a little, um, wrong.

So what's the answer? Renewable energy? Wind power is impractical as I would need a commercial sized turbine. A 6kWh solar system would cost around £15k to install and would only produce that level of power for a few hours on sunny days. If we put our Labrador on a treadmill it would run like mad for 20 minutes, then fall asleep for the rest of the day, surfacing occasionally to eat, while our local pet shop reckons there simply aren't that many hamster wheels in the world.

Clearly, economising on the actual energy usage is the best bet. I shall henceforth turn off my home cinema system when it is not in use, I shall wear slippers rather than fire up the underfloor heating and the fish have been advised that it will be a very nippy winter. The hot tub, however, is staying at 38° because I refuse to compromise on the essentials.

How are you cutting back to save energy? Email us your tales of frugality to letters@hcc.co.uk



Richard Stevenson hopes to get his carbon footprint down to a reasonable size by wiring himself up to the treadmill at his local gym

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